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THE

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No. 2.

ESSAYS

ON

Various Subjects of Practical Farming.

BY EDMUND RUFFIN, OF VA.

ON DRAINING.

[Continued from page 8.]

THESE three classes of low land agree in being formed either wholly or in part by the alluvial action of water, and in requiring relief mainly from the injuries of surface-water applied in streams. But in the manner and time of the alluvial action, and the results, and also in most other respects, these several kinds of wet or low lands are very different from each other. Also in the methods of draining there are important matters of difference, as well as of agreement in other respects. The greater number of bodies of low ground (excluding tide-marshes and extensive peat swamps or bogs,) belong severally to one or another of these three divisions; but many others partake of the characters of more than one. But great as are the differences of character of the several classes, as here arranged, and even of different bodies of land, belonging strictly to some one class, nearly all such lands are or have been fertile, and possess great agricultural value—unless so far as the value has been impaired by ill-directed labour of tillage or of drainage. Passing by all minor variations, whether natural or artificial, the different classes of low lands will be described and treated according to their respective general characters, and their requirements for drainage. According to their qualities of surface and of soil, all these lands will need the drainage of surplus rain-water, by water-furrows, grips, and rain-ditches, in like manner as directed above for higher lands. But in addition, these lower lands require the proper use of stream-ditches, as the especial and most important means for their drainage: and which means will be the principal subject of the following observations and instructions.

1.—Bottom lands of elevated valleys, bordered by high hill-sides.

In a hilly region, or where high table-land is cut through by valleys, every such valley is, throughout

its length, passed over by a stream, which, in past times has brought down and deposited all the earth now composing the soil, and the inferior beds for a considerable depth. The stream has enough of descent, and consequent velocity, to be at all times rolling onward slowly the sand in its channel. When swollen by rains, the supply of transported earth, washed from the hills, is greatly increased; and the stream then overflowing the low land generally, deposits the heaviest particles of earth (sand,) nearest its margin, and also in greatest quantity, while the finer clay and washings from rich soil, are longer suspended in the flood, and when dropped, are spread thinly over lower levels and at greater distances from the stream. This natural and continued action of all rapid and overflowing streams operates to raise the land highest nearest the stream; until so much difference of level exists, that at some time of overflow, or because of some new obstruction in the old channel, the stream leaves some portion of its former bed, and finds or opens a new passage through a lower level. Thus every lower part is successively raised by either the temporary overflows or the more permanent changes of the course of the stream. And by these operations, whatever may be the slope of the bottom of the valley along its length, the surface is not far from level, at any time, in any cross line. The difference of height of surface in any such cross line will rarely exceed two feet.

The main streams of such valleys are of all sizes from mere rivulets to large mill-streams, or even small rivers. The bordering flats are of widths bearing some proportion to the sizes of the streams; and are usually within the extremes of 30 to 150 yards wide. The streams have considerable fall, or rate of descent in their course—say from 8 to 15 feet in the mile. The bottom land has still more fall than the stream. The natural laws which regulate the motion and the effects of flowing streams tend continually to equalize the whole fall, or descending grade, of the bed of each stream, and of the bordering alluvial land; and also to bring to something like equality the respective grades of different streams and bottoms. For if there be an excessive accumulation of deposited earth, and of height of level of the low ground, at the upper part, (the place of first and largest supply from the hills,) the stream will be made more rapid by the greater fall so given to its bed, and subsequently, it will carry all moving or suspended earth to a lower

level, before depositing any. Not only so of the supplies of earth from the hills, or the higher streams, but its own channel will be cut deeper and wider, and the excavated earth removed to much lower levels, where the fall is less, and the current has less velocity. And if any intermediate part of the channel should have much less fall than the adjacent parts above or below, this more level part of the stream will receive accessions of earth to raise its up-stream part, until the general rate of fall has been nearly equalized. And low parts of the land, from the natural and obvious operation of the water, will receive larger shares of the deposited earth, until brought to the general height, and nearly to the average grade. Therefore—provided there is sufficient length of stream, and of general fall in its course, and also that the soil of the bottom is of loose materials, subject to be abraded and removed by water—every stream will tend to approach a certain degree of uniformity of fall in all parts of its own course; and also of uniformity of its fall with that of all other similar streams—and consequently, of the alluvial bordering lands, whose deposition and height of surface are produced by the action, and are proportioned to the height of their streams. This general grade, to which all streams (of the character stated) tend to bring their channels, is within the two extremes of being so steep as to be liable to be cut deeper by the current, and so level as not to permit the further rolling onward of the sand brought from above, and so are constantly choked by the stoppage. Within these extremes will be found most streams in their natural channels. But this equalizing operation of flowing water must cease when it loses the general fall, or the low-enough discharge, necessary for the exertion of the power. If the stream is discharged into a mill-pond, or upon a tide-marsh, of course all its fall there ceases; there is nothing to receive or carry off the deposited earth, or at least its heavier parts; and of course the channel of the stream would be there filled with the earth washed from its upper parts, unless often cleaned out.

These natural and universal laws of moving water, and the certain effects, should be brought to aid, and fully to concur with the designed operation of every plan of drainage in such situations. If, in such cases, we bring Nature to work with and for us, the beneficial result desired will be surely and easily obtained. But if in opposition to Nature and her laws, the labors for drainage will yield more disappointment and failure than success and profit.

Bottom lands of the kind under consideration, in their natural state, must have presented scenes of remarkable beauty. The clear stream, not as yet choked by the earth washed from cultivated high land, and rarely obstructed, flowed in a deep and meandering channel, bordered by high and dry margins. The springs, bursting out at the foot of the adjacent hills, either had cut sufficient passages to flow in little rills to reach the main stream, or their scant waters had sunk and disappeared in some sandy part of the soil—leaving but little space deformed by standing water or mire. The bottoms were for the greater part dry and firm, and were covered by magnificent forest trees of kinds suited to such soils—poplar, gum, ash, maple, and sycamore. The steep and high hill-sides on each side, in some places jutting out and in others retreating, were covered by as noble oak and hickory trees. All these beautiful and fertile bottoms have long been cleared, cultivated, and very generally dam-

aged greatly in value by their improper treatment. Their original beauty can only be inferred from the parts too narrow to be worth bringing under cultivation, and which therefore remain in their natural state.

When the neighboring higher lands, and especially the bordering hill-sides, were cleared and cultivated, and their soil and even the sub-soil in many cases were washing down with every heavy rain, then commenced the ruin of both the natural beauty of the bottoms, and much of the available value for cultivation. Their drainage was still a later operation; and was generally conducted improperly, as well as the subsequent cultivation; so that the lands were more than half worn-out, before they had been half-drained. Still, much of value and fertility remain to be obtained by better methods; and the proper system of drainage, even if necessary to be made altogether new, will cost less than to continue to keep the old ditches in order.

The general courses of the valleys are usually crooked—the outlines of the bottom-land still more crooked, (being the boundaries marked by the irregular curves of the base of the hills—) and the stream, in its natural channel is more crooked than either. Besides the occasional changes of the course of the stream, made in seeking a lower and often a much longer channel, every considerable obstruction of the stream, by earth or the fixing of before floating rubbish, tends to produce some new direction and channel. Every long straight stretch of the stream increases its velocity, and makes it work to prolong that course by cutting into the earth at its lower end, and so scooping out what must make a very great crook and sudden turn of the stream. Thus, the tendency of all such obstructions is to increase the crookedness and length of a stream, as well as to choke its channel and raise its level.

From high and hilly lands, the surplus water of heavy rains flows so rapidly as to produce torrents down the hill-sides, and high though transient floods along the streams, and sometimes over the bordering low grounds. Though so large a proportion of rich soil has been swept off the higher lands and deposited on the lower, as to have made the latter very rich in their natural state, still the larger proportion of the washed and transported earth was merely sand. These different kinds of deposits were often intermixed—but in many cases they appear in separate and distinct layers.

The errors of ordinary management of these lands, both of drainage and tillage, are too numerous to be described in detail. The most important of those which effect the drainage injuriously, are the following:—1st. Permitting the stream (if large) still to run in its natural crooked or obstructed channel; and, consequently, the level of the water to be made too high for the drainage of the land. 2nd. Thickets of rank weeds and shrubs and vines growing on the margins of the crooked stream, because inaccessible to the plough:—3d. When straightening or altering the course of the stream, the cutting the new passage along one side of the low ground, adjoining the base of the hill-side:—and 4th. The use of open side and spring-ditches, subject to be choked more or less by every rain-flood.

The procedure, different in all these respects, necessary for the proper drainage of such land will now be stated, though in general and cursory manner.

Most of all the smaller streams in cultivated lands, have already been changed by ditches to

straighter and better routes, though rarely to the best that might have been chosen. It is only as to some of the large streams that this has not been attempted, and at least partially effected. The larger the stream, the more necessary and the more beneficial will be the improvement made, by straightening its course. But it has been in many cases left undone, because of the supposed difficulty of the work, or of legal obstacles, in consequence of different proprietors holding parts of a body of low ground, which can be drained properly only on a general plan, of extensive operation. I shall not stop to discuss the latter obstacles; but proceed as if they had been removed, if not by wiser legislation than has heretofore prevailed in Virginia, at least by private agreements and co-operative action of all the adjacent and interested proprietors.

When a large stream, having abundant fall, is to be straightened, the new route should be chosen without regard to the old course, or to the line of the bordering high ground. The improver is usually tempted to adhere as much as may be to the most suitable parts of the old channel, because saving so much new work of excavation; or otherwise, to keep the new excavation along the line dividing the high from the low-land, to preserve the body of low and valuable land as much in large pieces as possible—if not in one unbroken body, as a continuous side ditch would serve for. Both these objects offer important advantages. But either will be dearly bought, if at the cost of adopting an improper location for the main ditch.

As these bottoms were the richest lands, very few parts of them still remain uncultivated. The land having been made fit for the use of the plough, (as a draining implement,) and also partially dry, are useful facilities for subsequent operations for drainage. But the actual labors for drainage usually in existence will rarely serve as parts of a new and correct plan; and are rather hinderances than aids to the latter labors. The drainer must consider, and decide according to the particular circumstances of each case, whether to preserve any parts of the old ditches, or to adopt a new plan of drainage entirely, and abandon and obliterate all the old work.

In commencing the improvement or renewal of the drainage of a considerable body of low-land of the kind now under consideration, the operation first in importance, though not necessarily first in time, is the straightening and properly locating the main ditch and the stream it is to carry and discharge. The whole ground, and every route, should be carefully examined, so as to choose the best possible course. This should combine as much as possible the different requisites of being the shortest proper route—running along the lowest ground—avoiding short curves when changing the direction—and obtaining as equal velocity as may be of all parts of the current. If straight courses are used at all, they should never approach very near at the point of a change of general direction in the ditch. Angles and even short turns by curves are altogether inadmissible. A long straight course serves so to increase the velocity of a descending stream that its direction cannot be suddenly changed, without injury. If a turn of the ditch be made at ever so obtuse an angle, or by a very short curve, the rapid stream rushes against the side of the ditch which is directly in its previous straight course, washes out a hollow, which, if in clay soil is swept off to the next deeper and stiller water, or if sand, or gravel,

is thrown across the ditch, immediately below. This operation proceeds slowly even in the ordinary flow. But when the stream is increased many-fold in volume and power, by rain-floods, then in a few hours a great chasm may be hollowed out into the land, and the designed channel dammed across just below, by the eddy of the torrent so depositing the washed sand and gravel—and the then flood of water continues its straight course over the low-land, spreading and overflowing according to the level and the obstructions, until finding places of discharge into the main ditch, at lower points.

In bottoms of the kind under consideration, of soil and sub-soil more or less sandy, (or gravelly,) and bordered by high hills, from which sand is washed and brought down by every heavy rain—the stream, whether in its natural crooked and obstructed channel, or in a properly located ditch or canal, necessarily must bring down much sand. It depends on the size, course, and location, of the channel, and the absence or presence of obstructions to the stream, whether this quantity of sand shall be frequently choking the passage, and require nearly all the accumulations to be removed by the farmer's labor—or otherwise that the sand shall be harmless, and even made serviceable, if there be ponds or other low places wanting raising. Every obstruction to the stream, whether by a fallen or floating branch of a tree becoming fixed and collecting rubbish—or by a sudden change of direction checking the current—or whatever cause may produce much inequality of velocity in the stream—all serve to cause the sand to be deposited at every place of comparatively still or eddying water.—These particular places of accumulation require to be frequently cleaned of the sand. Thus most of all the sand brought down will have to be thrown out of the ditch by hand, at an enormous expense of labor—and the repetition may be required, in part, by every flood of rain. Moreover, as these clearings of sand are required mostly at the particular points of obstructed water, the quantities of sand thrown out there on the banks become a cause of increased labor in throwing later sand, and of injury to the land so covered.

Now under the reversed conditions of a proper location, combining as much as may be the different requisites stated above, a smaller ditch, or canal, will much better discharge the same volume of water—there will be less sand washed out of the banks and thrown into the channel—and the sand which is brought by the streams from their higher waters, and of which the access cannot be prevented, will be mostly carried off, without doing injury, by the regular action of the stream itself. This beneficial operation is produced by giving to the stream, in its new channel, equal and uniform velocity.

It is not necessary, in the beginning, that the bottom of the ditch shall be brought to an equal grade, or rate of descent, throughout. If the general or average rate of fall be sufficient, the parts of the bottom left too high will be washed out deeper, and any too deep will be filled up by the washings from above; so that, if the location and course of the main ditch (or of any smaller ditch of like kind) be right, the grading will become regular. If there be too much fall, the ditch generally will be washed deeper; or will discharge more earth at its outlet, than is brought in at its upper end and sides. If there is too little fall, the reverse effect will be produced, and the ditch will be always retaining sedi-

ment or sand, because receiving more than it can discharge. But (as stated above,) the greater number of such bottoms were so graduated by the very manner of their natural formation, and the deposition of drifted sand and suspended clay, that they are in the desirable medium between these extremes; and their streams placed in proper channels, have enough velocity to carry on steadily all the drifted earth received, and not enough fall to wash the channel much deeper, or injuriously.

Under such circumstances, if the stream is observed at any part of its course, it will be seen that the loose sand at the bottom is continually moved onward by the force and fall of the current. As there is no obstruction to its passage, the sand continues to move on, and will continue to move on, and will do so for any distance, if the same circumstances continue to operate. Whether the course is one mile or twenty miles does not affect this operation and result. So long as the passage is unobstructed, and the velocity of the water unchecked, and the fall is sufficient, the sand will be rolled on, slowly but steadily, towards the outlet or final place either of discharge or deposit. The finer earths, clay or mud, suspended in the water, of course will pass off still more rapidly, and to greater distances, than the heavier sand and gravel. Wherever the fall of the stream is much reduced, or changes to a level, as on reaching tide-water, or a mill-pond or lake, then the drifted earth will be deposited, (as before stated of streams in their natural channels,) and there the outlet of the ditch may require frequent removals of the accumulated sand, by hand-labor.

In an extensive body of land, and length of ditch, the sand may be sometimes put to a good use, in filling the basins and hollows in the land. If the main ditch is conducted through such places, needing raising, it should there be given a depth of 6 to 12 inches more than required for mere drainage—or more if the digging is in rich mud soil. The drifted sand will soon fill this deeper cutting; and at convenient times may be shovelled out, so long as useful to raise the low margins and adjacent depressions.

It is scarcely necessary to compare with this manner of properly locating a main ditch the ordinary and erroneous plan of placing it along the junction of the low and high land. There could scarcely be a worse position chosen for the operation of the ditch and the stream it conveys. The level of the ground on the side (where most exposed to receive drift earth washed from the hill-sides,) is necessarily higher—the route is more crooked—and the turns of the course more abrupt—than may be had elsewhere. All these are causes for filling the channel with more earth than the stream can carry away. But there are other assistant causes. The high-land-side of such a main ditch, if not also its other side, (next the low ground,) will be soon covered with bushes and vines, over-hanging the stream, and soon furnishing the obstructions to its course. The rank and matted growth catches and stops the floating rubbish; and these accumulations so obstruct the current, that it overflows its bank and the adjacent land with every heavy rain.

The inducement for this plan is that the main ditch may also serve for the side-ditch to cut off the springs which come in from the high land. This would indeed be a great gain, if the side-ditch is necessarily to be also an open ditch. But this is rarely required. The side-ditches (as will be shown

hereafter,) ought to be covered drains, and therefore will oppose no obstruction to tillage, and cause no loss of land. Their consideration however belongs to another branch of the general subject of drainage—that of under-water, and by covered drains most usually. It is sufficient here to say that these side or *spring-ditches* are to be sunk all along the base of the hills or the rising ground on each side of the low-ground—deep enough to cut off all the springs; and, at convenient distances, and by the shortest *cross-ditches*, (also covered, when of sufficient depth for covering properly,) the spring water should be conducted to and discharged in the main ditch.

So far my observations and directions have been applied especially to but one of the three classes of low ground requiring to be drained principally by stream-ditches. But the same views will also apply more or less to the drainage of both the other classes—so that their consideration will not occupy so much space as was required for the first class.

2. Low and Flat Swamps, on very wet bottoms of Valleys.—This class of wet land differs from the preceding in having less fall, and the streams therefore being more sluggish and more obstructed in their courses—and in the bordering higher lands being usually of gentle slope, and rising to no great elevation. Owing to these different circumstances, (and also to the adjacent high lands being generally of sandy and absorbent texture, and level surface,) the supply of surplus water from rain torrents is much less abundant, less rapid, and less operative in bringing in and afterwards carrying on transported earth, than in regard to the class of low lands already discussed. The smaller supply of surplus water is however more confined, longer retained, and therefore in much greater excess on these flatter bottoms. Also, with the alluvial deposit of finely divided and floating earth brought down and distributed by the wide-spread and comparatively still and overflowing waters, there is another intermixed and very important deposit, of slowly decaying remains of plants which grew and perished on the ground, and which often give more or less of a peaty constitution to such soils. Soils of such constitution, and full of water, of course are soft, if not miry. But it is not meant to include or to treat of the very extreme bodies of true peat swamp lands, such as the great Dismal Swamp of Virginia, and many others still more extensive of North Carolina and the more Southern States. These occupy vast spaces—and as well as the tide-marshes, (also principally of vegetable constitution,) offer a wide field for interesting inquiry and discussion. Both these great bodies of vegetable soils have occupied much of my labors of investigation, and personal examination; and most of the results have already appeared in sundry former publications. For this reason, as well as because of the magnitude of this particular subject of peaty or vegetable soils, it will not be embraced in this essay—which, in regard to swamp lands, will be confined to the smaller swamps in valleys, usually of no very great width, though in some cases a mile or more, and bordered on each side by higher lands. Still these smaller bodies of swamp lands, (compared to the vast areas above referred to as omitted,) are quite extensive in lower Virginia, and offer rich rewards for the draining them, and totally altering their existing saturated or submerged condition, and removing all the existing evils to health subsequent thereupon.

The same general principles of drainage which

directed the instructions for the higher bottom lands before considered, may be applied to and should indicate the drainage of swamps in valleys. The operator however should make due allowances for the difference of circumstances, and shape his practice accordingly. In the swamp bottoms there is less fall, (though plenty for sinking deeply enough the main channel, and discharging the water—) and therefore less sand, and even mud, will be brought in by the stream, and almost none carried out. More width and depth of excavation will be required for the channel of the main stream—and much more and frequent labor afterwards in cleaning it out, to maintain the original and proper depth. But the more level and slower stream will do less damage by abrading the sides of the channel; and the new direction given to it may with safety be more in straight stretches. The less height of the adjacent higher lands, their generally level surface, sandy texture (readily absorbing surplus rain-water,) and gentle slopes toward the swamps, all serve to lessen both the volume and velocity of rain torrents, and the quantity of earth they can wash down from the high to the low land. This last named condition also permits open side-ditches (for cutting off springs,) to be less unsafe than along high hill-sides. But still in this, as in other cases, it will be safer, and better in all respects, provided there is enough fall for the purpose, to have these side-ditches covered.

Perhaps these general directions are enough for a judicious though inexperienced operator. At any rate, I ought not to attempt more, inasmuch as I have had no personal experience of this particular branch of draining. And but few other farmers in Virginia have had any such experience, because the legal policy of the commonwealth indirectly but very effectually prohibits all such swamp-drainage, unless in the rare and very limited cases of the whole length of a swamp, being included in one man's property, and its proper system of drainage being capable of being also placed under his control. The very existence of a swamp, and its physical character, imply considerable extent of length, if not of breadth also—and of course, its belonging in part to many different properties. Under our law, nothing short of the general agreement of all the proprietors, and their co-operation in the expense and labor of one general scheme, can permit proper and profitable drainage to be executed. Of course such co-operation, among scores, and, in some cases, hundreds of different proprietors, is impossible. No extensive swamp, therefore, has been or can be drained. Yet the larger the swamp, the cheaper would the object be effected in proportion to the value to be obtained. The draining and reclaiming of such extensive swamps as those of the upper parts of Blackwater, Chickahominy, and Piankankank rivers, in lower Virginia, if executed on a general and proper plan for each of these great bottoms, would be certainly and cheaply effected; and immense new values both to the individual proprietors and to the public interest would thereby be profitably obtained.*

* The following passage from an article which I wrote and published in 1833, is not less applicable at this time:—

"In this point only [swamp lands and their drainage] there is nothing to object to as faulty in the practice of individuals. For our laws (indirectly but effectually) forbid all such extensive drainings—and thus, our government shows a degree of negligence or stupidity (—it deserves no milder name—)

which surpasses all of which evidence can be found in individual operations. When our country was first settled, it seems probable that these swamps were comparatively dry, and the streams unobstructed, except by the dams constructed by beavers. But every operation of our civilized population has served still more to raise, obstruct, and stagnate the waters. The only profit yet drawn from the swamps has been by getting lumber from the large cypresses and other timber trees. In cutting down these trees, their tops are very often thrown across the stream, where each serves to catch all the leaves and other floating rubbish, until it forms a dam, and raises and often diverts the stream to a new bed. The current is at no time sufficiently strong to remove such obstructions, although it may be spread over a flat of half mile in width; and every one remains, until covered over with a deposit of mud. The law permits any land-owner to add to these obstructions at his will; but (in effect) refuses the right to use the only means for bringing into profitable culture these great tracts of rich land, and of restoring health to the neighboring farms, which they now infect with bilious diseases.

Notwithstanding the great extent of overflowing waters on the flat swamps, the supply is much smaller than it appears; and they could be removed and kept within safe bounds by opening a canal from the outlet below, through the whole course of the swamp, as straight as the farm and inclination of the land would permit. Level as such swamps are, there is plenty of fall for this purpose; and a ditch of 10 or 12 feet wide and 3 or 4 deep, would drain away the water which, as now obstructed, inundates many thousand acres. The expense of this central main carrier would be very inconsiderable, divided among all the owners of a large swamp; and when finished, nothing more would be wanting to make the land dry, except the small side-drains to intercept the springs coming out of the highland, which each proprietor would dig for himself. ***

"But cheap and profitable as such drainings would be, they are rendered impossible under our existing laws, because the concurrence of every individual owner of the swamp is necessary for the execution of the work. Black water swamp, (for example,) is more than 60 miles long, including all its branches, and perhaps belongs to more than thrice as many individuals, and it is manifest, that from such a number, no such concurrence can possibly be expected; even if there were among them no minors, or life estate holders, neither of whom can legally concur. If by possibility, only a single proprietor opposed the scheme, while all the others were in favor of it, he alone might obstruct the execution. Nor is there any remedy to be soon expected. If three out of every four of the proprietors of any of these swamps, were to be awakened to the importance and profit of such a general plan of drainage, (and I am sorry to confess such is far from being the case,) and were to petition the legislature for powers to make it, and to compel all others to bear their share of the cost, the proposition would excite violent objections, and perhaps intolerant and unappeasable enmity to the scheme. Every small lawyer in and out of the legislature, would be furnished with a most convenient theme. We should hear the plan denounced as an invasion of the "sacred rights of property," and the denunciation maintained by so many arguments, (or what would pass for arguments,) that the advocates would be glad to retreat from the wordy inundation.

But plausible as such arguments may be, precisely such might be urged against opening the existing, or any roads, through private property, if we can suppose such a case possible, as a country being settled and cultivated, without having a public road within its limits. Roads are cut through private property without asking leave of the owner; and he is also taxed according to his property, to pay his share of the expense of construction. Sometimes it happens, that the road for which a proprietor is so taxed, both on his landed rights, and in his purse, though beneficial to the public, is to him individually a source of inconvenience and of loss. Still these exceptions are properly considered as no objection to the general regulation, for the general good—and the lawyers raise no objections, because the policy is already sanctioned by law. But if all of lower Virginia had been one great swamp, held by thousands of individual proprietors, and which could be drained as easily as Chickahominy and Black water swamps now could be, according to our laws, and to the arguments of lawyers, there would be no possible means, consistent with justice and the principles of our legal policy, by which this beneficial improvement could be effected.”—(*Farmers' Register*, vol 1. p. 386, 7.)

[To be continued.]

GUANO.

To the Editor of the American Farmer.

Sir:—Though no Agriculturist by profession, we have yet given the subject some attention, and have noticed with interest the great renovation of our soil, which has taken place principally by the operation of Guano and other fertilizers. To enable the former to repay the farmer for his outlay as it should, we all admit the article ought to be afforded at a rate lower than it has heretofore been, and we had hoped the movement recently made by our Agricultural Society, would have been seconded by similar institutions, and resulted in such a reduction of the price as would have placed it within the reach of all.

Such however, has not been the effect, and an examination of the printed accounts would indicate very clearly to our mind, that these efforts have not been directed to the salient point; and to meet with the desired success, we should change altogether the direction of our blow. The whole subject of the guano trade has been studiously mystified, and we fear our committee did not clearly understand it, when they induced senator Pratt to present his resolutions. Our citizens, in the trade, have always been on a footing of perfect equality with those of other nations, and the merchant or company who can offer the best terms will get the contract, let him belong to what country he may; but the present English company having large resources and unbounded credit, with “the hang of the thing,” have always been enabled to carry their point. But ‘tis not that our merchants are unable to obtain the contract that we complain; ‘tis not the English monopoly we would break down, but we would abolish all monopolies. We would desire to have the trade thrown open, and until this is done, the price will not be reduced, for let those get the contract who may, it will be held but to make money, and we have yet to learn the American speculator would be less apt than his English brother to make all he could out of the operation.

We do not know certainly what portion of the proceeds of a cargo is received by the Peruvian

government, but we apprehend it is a very small amount, and the point at which we should aim ought to be to allow all our vessels to go there and take in what they may desire at some fixed rate—say, if you please, ten dollars per ton. By this means the heavy commissions here, and all the various “trimmings” which swell to so large an aggregate, would be saved. Our whaling ships, if unsuccessful, would put into Callao for a load, and the innumerable California fleet would bring return cargoes of this manure—satisfied if they could realize by the sale, first cost, and a moderate freight on the cargo. By this means the Peruvian government would derive an increased revenue from it, while the supplies in this country would at all times be ample, and at low rates, and the dealer, owing to the greater consumption, would be remunerated by a smaller advance.

This has been the policy pursued by the proprietor of the Patagonian Coast, who received for his share, one tenth of the net proceeds, and though the captains have always been at a very heavy expense curing and loading—which would be saved in Peru—the article has always been afforded in market at about two-thirds the price of the former.

The contract between the Peruvian government and the company, we learn has just been renewed for the present year, but we think if the subject was fairly brought before our Executive, and they were advised exactly what we desired, there is little doubt but such an influence would be brought to bear on the Peruvian government, as would induce them to change their mode of procedure, and make some such arrangements as we have indicated.

The subject is too important and involves too heavy an interest to be suffered to remain before our government in the position it now is.

AGRICOLA.

AGRICULTURE AND AGRICULTURISTS.

BY PATUXENT PLANTER.

That Agriculture is daily increasing in importance and becoming hourly more a science;—making rapid progress in the great art of increased production with diminished labor, and rising in respectability as a vocation, in the opinions of mankind generally, are facts not to be denied. That those who now pursue it as a means of livelihood, independence and pleasure, are more intellectual—are better educated, and devote beneficially their mental acquirements, to what was formerly only physical labor, and consequently have accomplished the most startling and wonderful results, are also facts not to be contradicted. Then, why such pure apathy—such total neglect on the part of the Legislature the past winter in all things concerning this great cause, and the interests of the farmer and planter who are “bones and sinews” of the State? Why appropriate to the “*Mechanics' Institute*” annually \$500, (which I think was perfectly right and proper,) and pass over a similar appeal from the Agricultural Society of the State, without even a Report, or a reason assigned for such neglect—such contempt of the interests of the working farmer. I learn too, that the lawyers and mechanics who were members of the two houses would have supported the proposition if it had been introduced favorably by some one of the Farmers who composed the two committees on Agriculture. Strange

still was it that some of that committee hold high offices in our State Agricultural Society. The action therefore which the Society at its last meeting took upon that subject, and also upon the dog Tax law, was very gratifying to the large body of planters and farmers, and all believe and admit that it will have a salutary effect upon the conduct of future legislators who represent more particularly the Agricultural interests. With *politics* the farmer ought to have nothing to do, but in *Legislation*, he should be heard, and by concentration and union, which is accomplished through the State Association, his voice would be potential. A never-ceasing agitation of these questions ought to be kept up until the Legislature meets under a Reform Constitution, when I hope more respect and attention will be paid to the farmer and his wants—and less distinction drawn between Mechanical labor and Agricultural labor. The farmer asks no favors. He demands only to be put on a fair footing with his fellow-citizens. He wants laws that will protect him from loss of his property. He wants laws to secure his flock of sheep raised with such care and expense from being totally destroyed by the lean and hungry starving curs of him who perhaps never had a sheep, or the value of one, yet keeps a large pack of unfed dogs; or perhaps some young spendthrift who keeps a large pack of hounds, and after hunting season is over, is off for the summer's travel or the springs, and pays no care to his hounds, but leaves them to live on their neighbors. Farmers want some protection against these rich and poor loafers, who by their persistence in keeping *worthless dogs* half starved, inflict a serious injury upon their honest hard-working neighbors. In these days of busy toil and progress, I pity the young man who has not business enough to occupy all his time, or at least if study and reflection and moral culture does not take up all the time that can be spared from business. What a lamentable spectacle for a patriot to behold, when he sees his young countrymen wasting their time and risking health and life in hot pursuit of a few lank and starved dogs, that are in full cry of a poor fox, that is frightened at his own shadow. Were it the Lion or Tiger chase—how different! But it is in truth, only the boy chasing the timid hare. If however, persons will do it, and choose to spend time and fortune in such recreations, let them; but permit the humble farmer to ask some protection for his property. Let them pay taxes on such dogs as they keep, and they will then keep fewer and only such as they can feel assured would not damage their neighbor. It is earnestly to be desired that such able writers as your old correspondent, "*A Learner*," and Messrs. *Earle, Calvert, Worthington and others*, will from time to time keep this subject "before the people," by caustic and argumentative articles in the columns of the "*Farmer*."

Of the value of such a journal as the American Farmer, to the planting and farming community, it is almost useless to speak, for the evidences of its usefulness are acknowledged by all who read it, and "the fruits of its good works" are manifested daily.

Agricultural Societies have performed wonders. By means of these associations and the spread of your valuable paper, Mr. Editor, great has been the increase in crops—in value of land—in value of stock—in dissemination of practical knowledge—in the improvement of the minds of our people, and manifestly great in the embellishment of our home-

steads, and in the improved beauty of the country.—Any traveller can tell by passing through a man's farm whether he is a member of the Agricultural Society or not, or a reader of an Agricultural newspaper. Look to the lower counties, to Talbot—to Federick—but especially to old Montgomery, and Prince George's. Old fields that before these associations were established were hardly said to be taxable, so low was the estimate put on them, now groan under the weight of 30 or 40 bushels of wheat, two and three tons of grass, and as much as a hundred bushels of corn per acre. The mule and the ox are taking the place of the expensive horse.—A cow's milking is reckoned by gallons, not by pints as formerly. A fleece of wool is now 8 lbs. instead of 3 lbs., and so in all things from great to small. And seeing all this has been accomplished by the exertions of a few men, and with limited capital in proportion to the great work on hand, which is progressing, still how wonderful that the fostering hand of Legislation should not be extended to the cause—and still more strange that even the voice of encouragement in the shape of a Report, should be denied to us after our earnest appeal!

My acknowledgments are due to a "*Voice from St. Mary's*," and will try and reciprocate his favors at some other time.

WHEAT FOR LOW LANDS.

ST. MOOR, AMHERST Co. VA., June 15th, 1850.

To the Editor of the American Farmer:—

SIR,—In reply to the question proposed by your correspondent "A Subscriber," as to what kind of wheat is most suitable for low lands, I can inform him that so far as my experience goes, the "White Bearded" is decidedly preferable to any variety I have ever seen for flat land. I think it less liable to rust or ledge than most kinds of wheat—the stalk being quite stiff and hard, which prevents it from falling, and being less sappy, of course it is not so liable to rust. Indeed when it first comes up it has a pale hue and continues so during the whole period of its growth.

I have tried the "Mediterranean" on low as well as upon high land, and have the same objection to it that your correspondent has. The stalk is so slender and soft, that I believe it will fall upon any kind of land, and when that is the case you know the quality is not so good and the quantity very much curtailed. On land which yielded in Mediterranean wheat eight bushels per acre, I last year raised thirty-two bushels to the acre, of the White Bearded. My only objection to it is its heavy beard, which makes the chaff worthless as food for stock. I generally winter my work oxen and mules chiefly on chaff mixed with corn meal or crushing, and they not only keep in condition but grow fat, so you will perceive that with me, chaff is a consideration, and makes it necessary that I should raise a portion of smooth headed wheat.

I last year sowed 403 bushels of wheat, 300 bushels of White Flint on high fallow land, and 103 of the White Bearded on corn land and low grounds. It is now the most promising crop of wheat I have ever seen.

I am not a subscriber to the "Farmer," but the gentleman for whom I am doing business (Mr. Philip St. George Ambler,) is, and is kind enough to send me not only the Farmer, but all his other papers and periodicals.

Mr. Ambler was among the first who subscribed to the Farmer, and I am sure he would not be without it for ten times what he pays for it. Notwithstanding the prejudice which has always existed against "book-farming," as the ignorant call it, Mr. A. has always subscribed to one, and very often to two agricultural journals, and has so far benefited by their precepts as to make a farm once "desolate and dreary," now to "blossom as the rose." And many of his neighbors seeing the good effects of his system have done likewise, and are now reaping the benefits resulting therefrom.

Very respectfully, yours, A. PETTJOHN.

For the American Farmer.

THE CROPS—MEDITERRANEAN WHEAT—CHESS, &c. June 10th, 1850.

MR. EDITOR:—My object is, to state simply some facts connected with the growing wheat crop. I have travelled considerably through the "Red land District" of Va., and also through some of the counties lying below the South West Mountains. I am sorry that I cannot report as favorably of the wheat crops as the newspaper accounts from other sections do. Four weeks ago they were promising here, but excepting a few crops they are now by no means promising. The crop in these sections will be short. I have never known fly to injure wheat so late in the season. Though it is all fully headed out, an abundance of fly may be found in its flaxen state. In addition to the injury from fly the crop of chess surpasses anything I have seen for years; some crops are half chess, others two-thirds, and I have seen a few crops almost entirely chess.

In a recent number of the Farmer, a correspondent of yours seeks to know the kind of land best adapted to Mediterranean wheat. It does best in stiff wet lands. It does not do well on light, thirsty soil. It is very generally thought that it is not sufficiently productive to justify its cultivation. It never makes a very large yield, and yet from a trial of five years, I am of opinion, that it has out averaged several varieties which I have cultivated, which are universally regarded as productive. It has not generally succeeded on the South West Mountain lands of this State, and yet I am informed that a gentleman in Albemarle, residing on the South West Mountains, and who has cultivated it exclusively for five years, claims an average yield higher than that obtained by any of his neighbors. This season having been a wet one and all my land in wheat being stiff, I should, judging from the relative promise of three different varieties sown, have made double had I sown altogether of the Mediterranean.

I have seen some crops of Guanoed wheat of great promise, but my sanguine calculations from guano have greatly diminished by witnessing recently some crops that cannot possibly remunerate for the outlay. In the counties of Caroline and Spotsylvania, and one or two in Orange county, the improvement is not such as to justify the use of the article, *provided*, only, the article used in these cases was genuine. The most if not all the crops here referred to, were manured with guano purchased from the same house in the town of Fredericksburg. It is strongly suspected that the article was not genuine. If this suspicion is well founded, it may explain the reason of the failure; but what security has the farmer, that he will not be imposed upon again? where, as in several of these cases, the purchase amounts to several hundred dollars, it be-

comes a serious matter to be obnoxious to such impositions. I had intended buying liberally of the article this fall, but these observations made upon the crops of others, and the slender chances for remuneration from my own crop, which was unquestionably manured with the genuine Peruvian Guano, I shall purchase but sparingly this fall, if at all. I have used guano on my corn and oats this season. The guanoed corn is evidently in advance of the other at present. The guanoed oats is also in advance of the other, but cannot possibly pay. Chappell's Fertilizer has been used on several crops of growing wheat within the range of my acquaintance, and I design reporting the effect, as soon as it is definitely decided. ORANGE, VA.

P. S.—A gentleman informed me a few days since, that he knew a lot of land sown with 5 bushels of clean wheat, which has all headed into chess! Does wheat turn to chess? Again, another gentleman informed me that he pulled up a bunch of stalks, all evidently germinating from a single grain, and that one stalk headed out wheat, and all the balance chess! Again, I know a very fine meadow (Timothy,) which last year yielded a very fine crop of hay, that has now all headed out chess. Does Timothy turn to chess? I state these facts for the reflection of the curious.

PREPARATION OF FALLOW LAND.

Queen Anne's County, Md., July 12th, 1850.

To the Editor of the American Farmer.

SIR:—The information I promised to furnish you with, respecting the preparation of the fallow land of Mr. Pere Wilmer, of this county, is simply as follows, viz:—

The land consisted of 15 acres field, and a lot of one acre, fenced off from the corner of a 40 acre field. The former was broken in August, and the latter in September, with Beache's Concave Plow, No. 9, harrowed and rolled until well pulverized, and top-dressed with stable, barn-yard, and compost manure. The 15 acres were sown with Mediterranean wheat in the last week in August, and a product of 23 1-3 bushels to the acre was received.—Three-fourths of the lot of one acre were sown with one bushel of what is known with us as the Hardware or Crate wheat, on or about the 25th October; from the one bushel he obtained a fraction over 30 bushels.

For the encouragement of those who may wish to settle in this county, I will here remark, that Mr. Wilmer's farm will produce on one-sixth of it more than three times as much as one-half would produce when he purchased it. This improvement has been achieved without the aid of Guano, agricultural salts, bone-dust, marl, and with very little lime. All the bought manure he has ever used has not cost him exceeding \$100 per annum, all the rest has been made on his farm.

All we want is industry and enterprise to make our lands equal to any in the world.

I should have furnished you with the above before, but have been waiting to give you the result of the present crop, which is a failure of more than one-half. He sowed 24 bushels of Hardware wheat, which promised a very heavy crop, but the rust has cut the crops of this county short more than one-half, and it has shared the fate of the rest. From the 24 bushels he has 86 shocks considerably larger than those that averaged him 6 bushels to the shock last year. If the wheat was well filled, I have no doubt they would average more than 8 bushels.

Very respectfully, yours, &c. SUBSCRIBER.

FLORENCE WHEAT—WHEAT TURNING TO CHESS—CROPS.

Aldie, Va., June 29th, 1850.

To the Editor of the American Farmer:—

DEAR SIR:—The Florence wheat is again better than any other varieties, and fully sustains itself in the public estimation. It has withstood the attack of the fly remarkably well, and in fields on which several varieties of wheat were sowed you will find chess in the other varieties, but none in the Florence wheat. This has attracted considerable attention in the neighborhood, and if wheat does not turn to chess, I cannot explain it. What are your views about it? I still regard the Florence wheat as the best variety I have ever seen, and can supply farmers with it at \$1 25 per bushel, delivered at Alexandria at T. M. McCormick & Co's. Our harvest is unusually backward, and our corn very small for the season. We have had a violent storm which has injured the wheat very much in portions of Prince William, Fauquier and Fairfax counties. I am told that whole fields of wheat were entirely prostrated by it.

Yours, respectfully, EDMUND BERKELEY.

* As our friend, Mr. B., has asked our opinion, we respectfully say, that we are a non-believer in transmutation—though we have no disposition to enter into a discussion of the subject at the present time, as experience has taught us that it might be interminable.

Sources of Phosphoric Acid,

AND

Suggestions on Coal as a Manure.

BY THE EDITOR OF THE AMERICAN FARMER.

Phosphoric Acid is found in various places, substances, and bodies. In the mountains of Estramadura, in Spain, there are immense calcareous formations, consisting chiefly of lime and Phosphoric acid—in some of the rock formations of western New York, appreciable portions of phosphoric acid have been detected; the beautiful, exact, and truthful analyses of the limestones of Kentucky, made by Professor Peter, proved the presence of phosphoric acid therein, in quantities ranging from .36 to 2.57 per cent.—it has been found in lead, in iron, in the Bolognian stones of Sicily, which are a species of selenite or gypsum—in most calcareous formations in Europe—in fluorine spar—in volcanic boulders—in the chrysolite—in the Dutch ashes, so celebrated for their fertilizing effects, it has been found to exist in quantities as high as 2 per cent.—various beds comprising *cropolithes* and organic remains, fragments of bones, fossil bones and teeth, have been discovered by Dr. Buckland, enclosed in lime formations in England, which have been found to contain 18 per cent. of phosphate of lime; that is, lime and phosphoric acid. Oystershells, marl, wood-ashes, the flint stone, fish bones, coal soot, wood soot, bones, fat, horns, hoofs, and flesh of animals, horse dung, cow dung and urine, hog manure, human ordure and urine, pigeon and poultry dung, brown coal, peat, marsh mud, the pollen of the pine in forests, wheat and its straw, barley and its straw, oats and its straw, rye and its straw, In-

dian corn, old cheese, beans and peas, and their straws, the potato and its tops, the turnip and its tops, the excrements of the dog, clovers and the grasses, guano, eggshells, coral, sugar, gum, honey, flour, the wood of trees and their leaves, rotten wood, the carrot, the parsnip, the cabbage—in a word, in nearly, if not all, animal and vegetable substances, it has been found to be present. And as it is found in the *soot* of coal, we see no reason to doubt but that it must be present in coal before combustion. If not there present—if not forming part and parcel of the thing itself—how came it to find its way into its product? Looking at this question with the eyes of common-sense and reason, and drawing our deductions from the premises presented to our view, we cannot conceive it possible, that any chemical effects can be produced by the process of combustion, to which it is subjected while generating soot, that can possibly create substances not previously existing in coal. But as we know of no analysis made by a competent chemist, with the view of detecting this acid, we will not undertake to speak positively upon the subject: though, as soot, the product of the combustion of coal, is found to contain *phosphate of lime*, that is, phosphoric acid and lime, the presumption is a fair in the body from which it was produced. And this and rational one, that both must have pre-existed view of the case is borne out by the fact that coal is the product, by slow, smothered, decomposition, of vegetable bodies,—of substances in which phosphoric acid are known to exist.

In suggesting coal as a manure, we have felt a diffidence in speaking in a positive tone, as to its being a source of supply for *phosphoric acid*, though we entertain no doubts upon the subject, as we are aware that that acid may be volatilized at a temperature of 560° and, therefore, might, with propriety, have assumed the fact, that the phosphate of lime found in the soot, had been driven off by the combustion to which the coal had been subjected.

If then, phosphoric acid does so exist, the coal fields of our country will open a vast and fruitful source, whence to draw supplies of this essential element of vegetable products.

Hence then, as there is a prospect that this acid does exist in coal, in sufficient volume to give it agricultural value, it becomes the business of the chemists of our country, to submit coal to the most careful and exact tests of analytic science. If such tests should result, as we feel certain they would, in establishing the fact of the presence of *phosphoric acid*, then will coal prove, as suggested by Dr. Ewell, a most valuable manure; for, according to the analysis of Dr. Thompson, the organic part of a variety of coal analyzed by him, consisted of

Carbon,	- - - -	75.28
Hydrogen,	- - - -	4.18
Nitrogen,	- - - -	15.96
Oxygen,	- - - -	4.58

100.00

Thus we have, in the above analysis, the very organic food needed by plants. And when we look at the constituent elements of the *inorganic* part of coal, as illustrated by the analyses below, there can be no question but that coal, whenever a fair trial shall be made of it—*whenever it shall be reduced, by grinding, to a fine impalpable powder*—and applied to the land in that state, will prove to be one of the very best manures ever applied to the soil, as its

elements are those which comprise the constituents of the generality of plants.

The following table showing what coal-ashes and coal soot consists of, when taken in connection with the above analysis, will enable us to arrive at something like an approximation to what really are the constituents of coal, or, at all events, to form a tolerable correct idea as to its applicability to the purposes of manuring:—

	Analysis of Coal-ashes, by Boussin- gault.	Analysis of Coal Soot, by Brown- not.
Argillaceous matter insoluble in acids, - - - - -	62	
Alumina, - - - - -	5	
Lime, - - - - -	6	
Magnesia, - - - - -	8	
Oxide of Manganese, - - - - -	3	
Oxide and Sulphuret of Iron, - - - - -	16	
Ulmic Acid, - - - - -		302.0
A reddish brown substance, containing Nitrogen, and yielding Ammonia when heated, - - - - -		200.0
Asboline, - - - - -		5.0
Carbonate of Lime, with a trace of Magnesia, - - - - -		146.6
Acetate of Lime, - - - - -		56.5
Sulphate of Lime, (Plaster,) - - - - -		50.0
Acetate of Magnesia, - - - - -		5.3
Phosphate of Lime, with a trace of Iron, - - - - -		15.0
Chlorate of Potassium, - - - - -		3.6
Acetate of Potash, - - - - -		41.6
Acetate of Ammonia - - - - -		2.0
Silica, - - - - -		9.5
Charcoal Powder, - - - - -		38.5
Water, - - - - -		125.0
	100	1000.0

It will be perceived by the first table, that coal contains 15.96 per cent. of nitrogen, and it will be recollected that, to nitrogen is ascribed the principle of nutrition—that to it, wheat is indebted for its gluten—that to it all the grain family are indebted for their nutritive properties—that to nitrogen, all plants that bear seed are indebted for the capacity, in a great measure, of perfecting them—that it is nitrogen, which imparts to roots, trees, and plants, whatever nutriment they may contain—and that, in animal economy, it is nitrogen, out of which flesh or muscle is constructed.

In speaking upon the subject of manures, Professor Gray, who we look upon as among the most reliable agricultural authorities, says:—

"In fact, the value of manures has been estimated by its power of yielding nitrogen."

Dr. Dana, whose researches into the properties of manures, are perhaps, greater than those of any other American, and whose scientific attainments as an analytic chemist, is as superior to those of most others, as his ability is unquestionable, holds the following sentiments, in relation to the appreciation which should be placed upon nitrogen as an element of manure.

"It is perfectly evident that the main agricultural value [of manure] depends on the ammonia or nitrogen, and the geine." * * * * *

"The nitrogen then, in dung, is that organic element, to which must be attributed its chief enriching quality. The nitrogen is the basis, both of the production of ammonia, and of the formation of ni-

trates. Hence the quantity of nitrogen in manures, will form a very good element in the estimation of their value. Manures will be found rich, in proportion to their quantity of nitrogen, or their power of forming nitrates. This is the great and first cause of the enriching power of dung. Though the action of all excrements has been referred to their inorganic parts only, common experience tend to the explanation which has been given of the joint action of all their parts."

Professor Norton, of Yale College, whose study of chemistry, as applied to agriculture, in the best schools of Europe—and whose experience in this country and that, eminently qualify him as a safe instructor, and entitle his opinions to the highest consideration, holds the following views:—

"Manures containing nitrogen in large quantity are so exceedingly valuable, because this gas is required to form gluten, and bodies of that class, in the plant; this is particularly in the seed, and sometimes also in the fruit. Plants can easily obtain an abundance of carbon, oxygen, and hydrogen, from the air, the soil, and manures. Not so with nitrogen. They cannot get it from the air—there is little of it in most soils; and hence manures which contain much of it, produce such a marked effect. Not that it is more necessary than the other organic bodies, but more scarce; at least in a form available for plants."

The value then, of coal, in an agricultural point of view—as a source of nitrogen—must be admitted to be immense. With the exception of Guano, there are no other substances, available as manure, which contain so much nitrogen, the great fertilizing element, as coal. This fact will be made manifest on glancing at the following table:—

Farm Yard Manure contains 1.95 per cent. of nitrogen.

Water from " " "	1.54	"	"
Oak Leaves " " "	1.57	"	"
Burnt Sea Weed " " "	0.40	"	"
Oil Cake of Linseed " " "	6.00	"	"
Refuse of Cider Apples " " "	0.63	"	"
Cow's Ordure " " "	2.30	"	"
Cow's Urine " " "	3.80	"	"
Excrements of the horse " " "	2.21	"	"
Urine " " "	12.50	"	"
Excrement of the hog " " "	3.37	"	"
" " sheep " " "	2.99	"	"
" " pigeons " " "	9.02	"	"
Dried Muscular Flesh " " "	14.26	"	"
Horn Shavings, " " "	15.78	"	"
Bituminous Coal " " "	15.96	"	"

It is difficult to conceive it possible, that any one capable of drawing just conclusions from the data here arranged before them, can doubt the efficacy of coal as a manure; and, therefore, we shall leave the matter to be considered and reflected upon by our agricultural readers, whose interests are so deeply involved in the conclusions they may arrive at, and shall conclude upon this head, by the remark, that, if it be the nitrogenous matters, so richly abounding in Guano, which gives to it its greatest value as a fertilizer, bituminous coal, in that regard, is second only to Guano, while the facilities of supply of the former greatly exceed those of the latter.

So far as the virtues of coal as a manure may be concerned, but for our respect for the opinions of others, we could have spoken in a less equivocal tone, as we used the refuse coke of the gas house in the year 1836, on a stiff, red clay soil, with decided advantage, both in the improvement of the texture of the soil—and that improvement is yet visible—and

in the increase of the crops subsequently grown thereon.

Let us, then reason together—let us consult our common sense. What are the constituent elements of coal, and what its products after combustion? We find by the foregoing tables of analyses, that it is rich in carbon—that it is rich in nitrogen, the great principle of nutrition—the important element of fertility—that hydrogen and oxygen abound in it, so also do lime, magnesia, oxide of manganese, oxide and sulphuret of iron, ulmic acid, sulphate of lime, phosphate of lime, combinations of ammonia, and of potash: and the various analyses of chemists assure us, that the same bodies are found in the plants cultivated by man; then why, we would ask, should not coal act as a powerful and efficient manure? We answer, there is no good reason to offer in support of the opinion that it should not; as whenever it may be applied to the earth in the suggested form of a fine powder, and subjected to the combined influences of heat, air, light, moisture, and the voltaic action of the roots of growing plants, its powers of reproduction will be restored. Possessing, as it does, all the elemental food of plants, it is bound, under the operative agencies which we have named, to yield them up, through the manipulatory processes which are carried on in the earth; the which, though performed beyond human ken, are, under the wise and beneficent ordination of Providence, intended for the benefit of man.

By reference to page 433 of our June number, it will be seen, in the extract which we gave from Dr. *Esell's* lecture, that that gentleman referred the virtues of coal, as a fertilizer, to the carbon comprising one of its elements—that he looked to that as the chief agent of its efficacy, if not the exclusive one. Now, however much power we may be willing to concede to carbon in the earth, in the formation of "woody fibre, starch, sugar and gum," and as an essential element also, in the formation of the "volatile and fixed oils, wax and the resins:"—and we are free to confess that we concede to it a most important agency, notwithstanding Liebig's theory would inculcate the doctrine that all the carbon found in plants is derived from the carbonic acid of the air, yet we cannot agree to ascribe to a single element the entire effect produced by applications of coal, when there are so many other constituents in it, as we have shown, that are essential to, and which exert such substantive offices in, the construction of the vegetable fabric—all of which form important parts in building up the entire body.

It is now 44 years since Dr. *Ewell* published his lectures. The science of nutrition was not, at that period, as well understood as now, and it is not, therefore, surprising that he should then have relied upon a single substance comprised in coal, as the exclusive operating cause of its fertilizing power. But now, though chemical research has not been as thorough as we could have desired—though the analyses made of coal, have not been specially directed to detect all its qualitative properties, nor with the view of ascertaining their application to the purposes of agriculture; still enough has been done, to prove beyond the possibility of doubt, in our mind, that *Bituminous coal* possesses within its constituent body, the food of plants, organic as well as inorganic—mineral as well as nutritive—and that, independent of its carbon, it has many other substances, which are eminently serviceable, and calculated to exert potential influences as agents of fertility and fructification. We therefore feel confident, that, when-

ever its power of cohesion shall be overcome, by the process of grinding, as we have before suggested, and it shall be applied to the soil in the form of finely comminuted flour, so as to admit of the free transforming influence of heat, air, light, moisture, and the electric force of growing vegetation—we say, whenever this shall be done, that coal will prove to be one of the most powerful, as well as permanent manures known to husbandmen.

It is beyond all question, that the coal formations are the results of the slow smothered decomposition of vegetable bodies—of bodies which once had life and being; and as such is the case, it is but reasonable to conclude, that whenever coal shall be properly prepared for the purpose, so as to permit it to develop its latent properties, it will be found still to possess the power of reproduction—still to be imbued with the capacity to sustain the vital functions, and not to have lost its recuperative principles.

We are aware that objections may be raised against the action of coal as a manure, on the ground of its indestructibility by atmospheric action. But notwithstanding its powers of resistance in this respect, we believe that when disintegrated and reduced to a fine powder, as we have before suggested, that air, heat, light, and the electric power of the living plant, will be sufficient to extract from it whatever it may possess in the form of manure: that however strong carbon, proper, may be in its resisting powers, the agencies we have enumerated, will overcome them, encourage the process of decomposition, and carry it on to that point which will render it tributary to the necessities of the growing plants.

It has been proven by successful experiments, that a plant grown in a glass vessel, is competent, through its roots, to decompose the sides of the glass, extract therefrom the silicate of potash, and appropriate it to itself: thus proving how potential are the powers and the action of the living plant, and would seem to encourage the belief—if not establish the certainty—that the presence of living plants in the soil, through the influences of their galvanic tendencies, when aroused into energy, in their efforts to secure nutriment wherewith to build up their structures, are competent to liberate from bodies with which they may be in contact whatever may be useful to their purposes in the way of nutrition. These substances once liberated, their absorption and assimilation by the plants, will follow as a natural consequence, as it does not comport with the economy of nature, to exert its strength in the obtainment of objects, without profiting by its efforts.

But, suppose for argument sake, we were to admit the unchangeableness of the carbon which comprises so large a portion of the constituents of the coal, which we do not, as we are firmly of the opinion, that through the influence of the agencies we have named, and the electric power of the alkaline bodies in the soil, a healthful degree of oxidation will be excited. If, however, we should be at fault in this particular, we can see no reasonable ground to doubt, but that the other constituents of the coal, in its dust like form, will be utilized and rendered available as nutriment for the growing plants. Contact, the electric forces we have alluded to, and the presence and galvanic action of the living plant, will render the assurance of this result doubly sure. There are other effects which we have not before mentioned that we will now intro-

duce to the reader's consideration. Charcoal, whether made from wood, or from coal, has a wonderful affinity for ammoniacal bodies—a wonderful power of condensing them within its own body, and of retaining them in store, for ulterior dispensation to the growing plants. In this respect, under certain conditions, its power of condensation extends to the capacity of eighty or ninety times its own volume. Another important effect, a most important one, will be produced through the application of the coal dust, that is, in the change of the color of the soil, from a light to a darker one, it being a well established truth—one known to every observant farmer,—that dark soils absorb more heat, and as a consequence, mature whatever may be grown on them, much earlier than do light colored soils. Let us then, look at the effects as probable to result, in whatever way we may, the benefits are such, and so full of promise, as to commend them to our confidence, and challenge experiment.

Florists have been for many years using charcoal in the culture of flowers, and we have seen authentic accounts of experiments in which the color of light colored roses have been changed to a dark and brilliant hue, after being treated to charcoal. Whence came this change of tint, if not derived from the oxidation of the carbon? Without such effects, its coloring matter could not have been infused into the structures of the flower, as without that, it could not have been held in solution.

In France, the manuring of the soil for wheat, with charcoal, has been successfully practiced, and in this country, it has been used as a constituent of the compost heap with decided benefit.

Liebig, while contending for the unchangeable nature of Charcoal, says:

"The only substances which it can yield to plants are some salts, which it contains, amongst which is silicate of potash. It is known, however, to possess the power of condensing gases within its pores, and particularly carbonic acid. And it is by virtue of this power that the roots of plants are supplied in charcoal exactly as in humus, with an atmosphere of carbonic acid and air, which is renewed as quickly as it is abstracted."

Again he says:

"Charcoal in a state of powder must be considered as a very powerful means of promoting the growth of plants on heavy soils, and particularly on such as consist of argillaceous earth."

The experiments by Florists,—the use of Charcoal as a manure in France, for wheat,—the use of it in this country, refer to charcoal made from wood; so do the statements of Liebig; but as we have before contended, it is immaterial whether carbon be produced by a smothered fire, or by the slow oxidation of vegetable matter in the earth, the substance is identical. The language of Liebig proves two things of importance. First, that the unchangeable nature of the carbon does not prevent the liberation of the salts and other substances which it contains. This point we maintained in the preceding part of our argument, and we are happy to see our reasoning sustained by so distinguished a chemist; for our chief reliance in the reproductive character of the coal, referred to the utilization of those very salts in the processes of the vegetation of the plants. Give us the free and undisturbed possession and use of these, in the nurture of plants, and we would almost be willing to dispense with the offices of the carbon in condensing the enriching

gases of the air, and economising them in the soil. And secondly because he, without qualification or reserve, pronounces the opinion that "Charcoal in a state of powder must be considered a very powerful means of promoting the growth of plants."

If Charcoal, produced by the combustion of fire, is thus valuable, that from pit-coal must be more so, as its volatile virtues have not been driven off by heat, but remain to exert a healthful agency in the reproduction of vegetable substances—in the fertilization of that earth which gave those plants being from which it sprang.

We have in the preceding part of this essay alluded to the extract which we gave in our June number, from a Lecture of Dr. Ewell. In a subsequent lecture that gentleman, recurring to his preceding remarks, thus alludes to the virtues of bituminous coal as a manure:

"When considering this article in another place, I stated that in a given bulk it contained a great quantity of carbon; a substance which enters into the composition of almost every vegetable, and which forms more than half the body of half the products of the vegetable kingdom. Now as carbon must enter into the composition of the domestic plants, it must be of service in improving soils. But it has been stated that before carbon can enter into plants, it must be in a certain state, in which, according to some, it may be dissolved in water, to be applied to the root of plants. Hence they have inferred, that as pit-coal is not soluble in water, so it cannot be of service to the roots of vegetables; and this has been supported by a few experiments made by different persons with the coal, by which it appeared to be of little or no use. Being forcibly struck with the quantity of carbon in this coal, I thought it very surprising that it was not found to be manure. This led me to institute several experiments, relative to the subject. The results of these experiments prove that coal is one of the most valuable manures, ever applied to land. While conducting these experiments I was conscious that the cohesion of coal was too strong to be overcome by the powers of the plant. This led me to provide against this, by reducing the coal to a most impalpable powder, previous to mixing it with the earth. When this was done, the coal accelerated the vegetation of wheat and corn with astonishing facility."

From the experiments made by Dr. Ewell, he says it unquestionably appeared:

1st.—That those who experimented with coal did not reduce it to a very fine powder.

2d.—That coal in the state of a coarse powder is no better than common sand, as vegetables have not the power to decompose it.

3d.—That coal reduced to a powder as fine as wheat flour, will unite to plants and act as a most excellent manure for all plants requiring carbon for their growth.

4th.—That great good would be derived if mills were erected for reducing coal to the state of a fine dust, as the coal could be had very cheap, from the immense mines found throughout the country, and the lands enriched at no great expense."

Hence then, it is proved by actual experiment, that bituminous coal is a valuable manure when brought into the state of fine powder, and as one fact is worth a dozen theories, there is no room left to question the results to which our reasoning have led us.

In presenting to our agricultural friends the foregoing essay, we repudiate every idea of holding up coal as a panacea; but simply desire to call their attention to the subject. We know that there are but few farms where the supplies of manure are ample—we know that there are large districts of country, whose localities forbid supplies from being derived from abroad, and impressed with the belief, that, in coal, a most valuable auxiliary may be found, to piece out the domestic supply of the farm, we have felt it to be our duty to commend it to public favor, and to ask for it a fair and impartial trial. A ton ground into fine powder, which could be prepared at a plaster-mill, would serve to manure an acre, and as the cost would be inconsiderable, we hope some of our enterprising agriculturists will make an experiment with one acre of wheat manured with 400 lbs. of Guano, one with 10 bushels of bone-dust, and one with a ton of pulverised bituminous coal.* Should this experiment be fairly made, we fear not the result even in the product of wheat, and feel more certain that its effects in the results of a four year's rotation, will still be more effective and lasting.

With respect to the mode of application—we would sow the coal powder broad-cast, and harrow it in, to afford the atmosphere an opportunity the more effectively to aid in bringing out its dormant energies.

* We have spoken throughout of bituminous coal, simply because the analyses given are of that variety, as also the experiments of Dr. Ewell, though we believe that *Anthracite* would, probably, be found equally good.

WORK FOR THE MONTH.

AUGUST.

Sowing Rye.—A very general complaint has prevailed for several years, that there has been a great falling off in the product of the rye crop. One farmer ascribes this falling off to one cause, and another to another and quite different one. One will tell you there was straw enough for a crop of twenty bushels to the acre, and yet, to his disappointment, owing to the heads not being more than one-half or one-third filled, he did not get more than half or one-third of that quantity. But among all the causes of failure which we have heard assigned, from year to year, we have heard none, which, in our opinion, was the true one. According to the present system of farming, the practice has obtained, of consigning the rye crop to the very poorest field on the farm, as if the roots, the stalks, the leaves, and the berries of the rye plant, could be built up out of nothing. Such is the practice, and how any one could expect to reap any thing but disappointment from it, we never could conceive. Rye delights most in a sandy soil, but it does not follow, as a necessary inference, that it can grow there and yield fruit, without it finds in such soils, such elements of fertility as it will be enabled to convert into food—into the organic and inorganic nutriment of which its body is composed. No matter in what soil it may be grown, the nourishment must be therein present, or rye can never be made to yield a good crop of grain, as the nutritive matters which form it are derived from the earth. Something never has, nor never will be, made out of nothing. The pure earth, unaided by mould,

produced by the decomposition of animal and vegetable matters, or by special manures, identical in composition, cannot perfect the ordinary crops of the husbandman, and it is unnatural to expect rye to form the exception to the rule, sanctioned, as the fact named is, by the experience of every husbandman, from the days of Adam, to the present day.—You may, therefore, set it down as a fact, that rye will not grow a good crop without manure. This question being settled, it becomes you to cast about in your mind, and determine how you can supply it. If you have decomposed, or half-decomposed barnyard manure in sufficient quantity, say 5 to 10 loads to the acre, that will answer:—if you have not that, the same number of loads of marsh mud, about half rotted down, and 10 bushels of ashes will answer; so will 200 lbs. of guano and 1 bushel of salt—so will either of the following composts, 10 bushels of bones, 5 bushels of ashes, and 2 bushels of salt—100 lbs. of the Nitrate of Soda, and 2 bushels of ashes, and 1 bushel of plaster; the three last, to be sown broadcast, as a top-dressing and harrowed in—the four first, to be ploughed in.

Preparation of the Ground.—Plough deep, and thoroughly pulverise the soil.

Quantity of Seed, per acre.—Sow 5 pecks to the acre.

Mode of Sowing and Covering.—Sow broadcast, and cover with the harrow 2 inches deep—first harrowing furrow-wise, then cross-wise, and finish by rolling.

Preparation of the Seed.—Soak in a salt brine, made strong enough to float an egg, for 12 or 24 hours—then drain off the brine, spread the seed rye on the barn-floor, mix lime or ashes with them, and when the seeds are separated, sow them—never taking more seed to the field than can be sown in a day.

Time of Sowing.—The earlier rye is sown this month, the better will it be enabled to take root and entrench itself against the effects of winter and spring freezings and thawings. Don't be deterred from early sowing for fear of the rye growing too rank. If it does so grow, in spring, all you will have to do, will be to turn your sheep and calves into your field to eat it down. Your sheep and calves will be greatly benefitted, while the rye will not be injured.

In connection with the culture of rye, it may be proper to mention that some farmers sow buckwheat with it, with the view of affording the rye plants protection through winter. The buckwheat being very sensitive to the effects of frost, is killed by the first one, falls, and thus protects the rye through winter. In spring, as soon as the earth is dry enough, a roller is passed over the field, which presses down the buckwheat to the earth, where it performs the double office of shading the ground, thereby maintaining moisture, and by decomposition, nourishes the plants. This is the theory of the practice, and we think it has reason in it.

Should you consign your rye seed to such a field as we have described, after having manured it in the way suggested by us, if you will sow thereon next spring, 5 bushels of ashes, and 5 bushels of lime, per acre, you may seed it to clover, with every prospect of the plants making a good stand, and of substantially adding to the fertility of your land. This you may say, is troublesome; but if it be so, you should recollect that the time has come when the proprietors of poor lands are bound, by every consideration of patriotism, duty, and interest, to use all their energies to restore them. Troublesome though the application of the suggested means may be, they are

full of that promise which vouchsafes gratified ambition on the one hand, and profit on the other; and when these desirable ends can be gained by a little expense and a little labor, surely no man who possesses that degree of self respect, which tends to the elevation of human character, should hesitate as to the course he will pursue. The agriculturist who may be animated by the true feeling, should be just as sensitive with respect to the character of his tillage land, as he is of his personal honor, and take just as much pride in keeping up the fertility of the former, as in preserving the latter from attain.

Setting Timothy Meadows.—If you design setting a timothy meadow during the month, we wish to assure you of this truth:—it is a waste of time, labor and money, to attempt to grow it on any but a fertile soil, without heavy manuring. This, your own good sense will tell you is the only rational view of the subject. A meadow set in timothy is destined to remain in that grass for, say, five years, at least. It is said to be a seven year's grass, but as meadows are treated in our country, they never last that long. If, every second year, they were top dressed and harrowed, they would not only last during the longest period we have named, but continue to afford profitable yields of grass. But, if unaided by such bi-ennial treatment, as all its annual products are carried off, and each abstracts from the earth, large portions of organic and inorganic manures, the soil becomes deteriorated, unable to sustain a heavy growth of vegetation, and, as a consequence, the great body of the plants, for want of food, die out.

As to the Soil.—A moist clay-loam, is best adapted to the culture of timothy; though it will grow on any fertile loamy soil. On porous gravelly soils, the plants do not thrive well. We have had it to grow luxuriantly on a stiff, dry, red clay, but we took especial pains in manuring and preparing the soil for the reception of the seed.

Preparation of the Soil.—The land intended for a timothy meadow, cannot be too deeply and carefully ploughed:—if we were about to set one, we should sub-soil it also. Before being ploughed, the land should be heavily manured. In ploughing, care should be taken to turn the furrow slice over flat, leave no balks, but do the work faithfully. The soil should be harrowed, and, if need be, rolled, in order that every lump and clod may be broken, and a fine tilth obtained, as it is useless to sow timothy, or any other small grass seeds, upon any soil that is not thus nicely prepared—for, if not thus pulverized, a large portion of the seed will perish, and disappointment ensue.

Manure and Manuring.—We have said that land intended for timothy, should be "liberally manured," and the necessity for it will appear evident to the reader, when he reflects upon the number of years it has to occupy the ground, and takes into the account, the annual abstraction of the elements of fertility, arising from the removal of the crop. Less than 20 double-horse cart loads of barn-yard and stable manure should not be applied to the acre: 20 bushels of bone-earth, 50 bushels of ashes, and 2 bushels of salt,—or 400 lbs. of guano, and 1 bushel of plaster, will also answer,—so also would 20 loads of marsh or river mud, and 50 bushels of ashes. Each kind of these manures to be ploughed in. If the land had not been previously limed, it should, in the succeeding fall, have 100 bushels of lime or ashes; or 200 bushels of marl, spread on each acre of it, which should be harrowed in, and the ground then rolled.

Quantity of Seed, per acre.—Less than 1 peck of seed per acre should not be sown—and were we setting, a timothy meadow, we should sow $1\frac{1}{4}$ peck to the acre.

Seeding.—See that the seed is equally distributed over your meadow, either by a careful hand, or by a machine; the latter way is the best, as it ensures greater regularity in the distribution. As the seed is sown, let them be harrowed in lightly with a small garden harrow. Some use a bush-harrow, but this we do not esteem a good way, as the bush is apt to draw the seed, stones, and clods, into heaps, leaving large portions of the ground uncovered by the seed; the seed being sown and harrowed in, finish your work by rolling. Some object to rolling on the ground that the soil may bake and prevent the germination of the seed. We have no such fears, but should apprehend much more injury to the seed, if left unrolled, from exposure to the sun; besides, by rolling the clods brought up by the last harrowing would be pulverised, and the earth being brought into immediate contact, the seed would germinate more quickly, while the surface of the soil would be rendered in the best possible condition for the mowers.

As we remarked last month—should you intend your hay for sale, it would be best to sow timothy seed alone, as timothy hay sells at a better price and more readily than any other kind in the market; but if you intend it for the consumption of your own stock, we think it would be well to mix red-top with the timothy seed. The quantity, if thus mixed, should be 6 quarts of timothy, and half a bushel of red-top seed to the acre.

Turnips.—If you did not get in your turnip seed last month, make an effort to do so by the 10th of this month.

For the kinds and qualities of manure; for the manner, of seeding, and mode of culture, see our directions in last month's number.

Late Potatoes.—See that these are kept clean. At the last working, make a mixture, at the rate per acre, of 1 bushel of salt and 1 bushel of plaster, and sow it broadcast over your potatoes.

Ploughing for Wheat.—Though too early for seeding, it is not too early to prepare the ground, and to be looking around you for manure to put your wheat in with. And as regards ploughing, we would remark, that deep ploughing, in a sound soil, is a great surety against winter killing, as by relieving the roots of the plants from the inconvenience of contact with the water at the bottom of the furrow, they are not so subject to be disadvantageously affected either by freezing or thawing. He that may have timely formed a compost of marsh-mud, manure and ashes, or marl, need not distress himself should he not succeed in being able to purchase guano or bone-earth, as in the former he will find a most reliable substitute. Except where clover-leys or grass swards may be intended for wheat, two ploughings may be given to the ground. Great benefit would be derived from sub-soil ploughing. And by the bye, we saw the other day a plough at R. Sinclair, Jr. & Co's. so arranged as not only to do the flushing, but the sub-soiling, with the same team, and which only requires an additional horse to work it. This will take away much of the objection heretofore made against sub-soil ploughing, on account of *extra expense*, as the only additional expense attending the working of this, will be that of a third animal in the team, a consideration that should not be entertained, when compared with the

advantages to result from the breaking up of the sub-soil, the letting in upon it the atmospheric air, and the extension of the pasture of the plants.

Fences.—These should be carefully examined, all repairs speedily made, and thereby securing the growing crops against the stock.

Granaries.—These should be thoroughly cleansed with strong lye, in order that they may be ready for the reception of the crops when harvested and threshed. We have seen it stated, that by placing tar in a granary, the odor emitted is so repulsive to the weevil as to drive that insect away.

Poultry Houses.—These require frequent cleansing. While we are upon this subject, we will seize the occasion to remark, that Dana estimates the salts contained in the droppings of a single hen, in a year, as being equal to those contained in 20 bushels of wheat. We believe his calculation to be as nearly correct as any calculation of the kind can be. The excrements of all kinds of poultry are rich in carbonate of lime, phosphate of lime, and nitrogenous matter, and, as we believe, equal in value to guano; then, why should not the farmer put himself to a little trouble to save them? If one hen can furnish the salts for 20 bushels of wheat, 100 would furnish them for 2,000 bushels,—so that, if farmers would attend to this item of homestead economy, there would be less necessity for submitting to the payment of exorbitant prices for guano, and the share of the short for the long ton. Small matters, by being attended to, grow to be large ones in time.

Threshing Grain.—Harvest over, let it be your policy to get the grain you intend to sell, threshed and ready for market as soon as possible, and seize every good opportunity of a rise in the market to sell.

Stubble Fields and Pastures.—By sowing a compost consisting of 1 bushel of ashes, 1 bushel of lime, and 2 bushels of salt, each year, on each acre of your land in stubbles and pastures, you will greatly improve the character of the herbage, improve the land, and destroy many troublesome insects.

Drilling or Broadcasting Wheat.—All the experiments we have read of, give the preference to the first method of putting in wheat. How you shall put in yours, is worthy of consideration. Drilling economises seed, protects the plant from winter killing, and produces more grain. Three good reasons these to induce reflection.

Sheep.—Attend to providing tar and salt for your sheep, in the way we recommended last month—the tar will protect them against the fly, while the salt will give tone to their stomachs, and preserve their health.

Milch Cows and two-year old Heifers.—Provide these with the services of a full-bred Durham, Devon, Ayrshire, or Hereford bull, in order that they may improve their issues, and bring forth in May next, when the pastures will be luxuriant,—and be sure to feed them well next winter.

Late Corn.—Let your Cultivators do effective work among your late corn, in order that in laying it by your fields may be as clean as a new penny.

Materials for making manure.—Employ a team and hand during the next three months, in collecting materials for forming compost heaps. Should you do so this year, the benefit will be so apparent to you that you will never afterwards neglect it. On every farm there are enough refuse matters to manure the spring crops, if collected and taken care of. Every thing that once had life will produce life again—the mud, weeds and grass of your marshes, the mud

at the heads of your creeks, the pine shatters and leaves of your woods, the cleansings of your ditches, the weeds and bushes which line your fence sides and corners, the scrapings of your lanes, yards, and head-lands, are all fruitful elements of reproduction,—then why, for the want of energy, will you permit them to go to waste?

Orchards.—If you have not attended to our advice of last month about the trees of your orchard, do so with all possible speed this.

Bushes, Brims, Sprouts, Shrubs and Weeds.—This is said to be the best month in the year to get rid of these pests of the field and fence. Then set a hand to work and exterminate them.

Draining.—Drain your wet lands, and thus prepare them for deeper tillage. The health of your family, as well as the yield of your crops, will be improved by it. By judicious draining, and deep ploughing, you may make one acre produce as much as two formerly did, the quality of its products will be better, will bring better prices, and, therefore, your income will be thereby increased.

Composts.—Those of you who may have marshy, fishing shores, can make a compost equally as good as guano. Four thousand fish, if composted with twenty loads of marsh mud or turf, 1 bushel of plaster, and 5 bushels of ashes, will in six weeks from the time of composting, form a manure equally as good to manure an acre of land, as would be 400 lbs. of guano; would be equally productive in the yield of grain, and, as we believe, much more lasting.

Mould.—We desire to impress this truth upon your mind—mould is an essential constituent of every productive soil, it is a source of fertility, of itself, and attracts other sources from the atmosphere.

Carolina Pinks and other pernicious weeds.—If your meadows and clover fields be infested with these pests, it is a duty which you owe your neighbor, as well as yourself, to have them pulled up and destroyed. Labor thus bestowed, will be productive of profit to yourself; set a good example to your neighbors, and win their respect and esteem.

VIRGINIA LANDS.—Few persons north of us, have an idea of the value to which lands in some portions of the Old Dominion may be brought—and those who are endeavoring to better their condition, instead of going to the West or California, had better turn their energies and resources towards the South, where lands are to be had almost at a nominal price, and the facilities for improving them at command—Let them look at the following results of well directed energy, which we copy from the Portsmouth (Va.) Pilot:

“We learn from our old friend, Capt. EDWARD CARTER, of Scott's Creek, that he leases twenty-four acres of his farm to Mr. Bishop, from “New Jersey,” for \$230 per year; that Mr. B. uses \$600 worth of manure per year; and after all this expense, clears for himself over \$6000 annually! Where, in the finest limestone region in this country, can this handsome profit be beaten? Most of the product of this little pattern farm is sent to northern markets. If, then, this can be done by Mr. Bishop, is there any good reason why as much ought not to be done on almost any property in this section, with the same industry and attention? We think not; and hope the time is not far off when many more such men as Mr. Bishop will turn their attention to old Virginia, instead of emigrating to the far West. Lands are cheap, the climate fine and healthy, with every comfort and convenience that may be desired.”



BALTIMORE, AUGUST 1, 1850.

TERMS OF THE AMERICAN FARMER.

\$1 per annum, in advance; 6 copies for \$5; 12 copies for \$10; 30 copies for \$20.

ADVERTISEMENTS inserted at \$1 per square of 12 lines, for each insertion. In case of the continuance of an advertisement for six months or longer, a liberal deduction will be made.

Address, SAMUEL SANDS, Publisher, At the State Agricultural Society Rooms, No. 128 Baltimore st. over the "American Office," 5th door from North-st.

Maryland State Agricultural Society.

The next Quarterly Meeting of the Board of Managers will be held on WEDNESDAY, the 7th day of August inst. at 10 o'clock, at the Hall of the Society, in the city of Baltimore, 128 Baltimore street, in the American building. The officers of the Society, it is expected, will be present without further notice.

By order, CHAS. B. CALVERT, President.
SAMUEL SANDS, Secretary.

OUR SUBSCRIPTION PRIZE-LIST.

We refer those wishing to become competitors for the liberal prizes offered by us for the largest lists of new subscribers to the "American Farmer," to the 17th page of the July No.—Although many of our subscribers have responded very generously to our request to send one or more new names with their subscriptions to the present volume, yet the competition for the prizes seems rather to flag.—We hope our friends will not permit the opportunity to be left unimproved.—The prizes will be awarded, if the number of additions, by that means, is not equal to the cost of the premiums.

THE FALL EXHIBITIONS.—The MARYLAND STATE AGRICULTURAL SOCIETY, holds its third Annual Cattle Show and Agricultural and Horticultural Exhibition, in the city of Baltimore, on Wednesday, Thursday and Friday, the 23d, 24th and 25th October, 1850. Copies of the list of Premiums, Rules and Regulations, Judges, Marshals, Committees, &c., will be furnished on application to S. Sands, Secretary, at the Hall of the Society, 128 Baltimore street, Baltimore. A copy of the list was forwarded to each subscriber of the "Farmer," with the June No.

The MARYLAND INSTITUTE for the Promotion of the Mechanic Arts, will also hold its 3d Annual Exhibition in the city of Baltimore, opening on the 14th October, and closing on the 31st October. Copies of the list of premiums, rules and regulations, &c. can also be had of S. Sands, Secretary of the Institute, or C. W. Bentley, Chairman of Committee on Exhibitions.

The New York State Agricultural Society will hold its Annual Exhibition at Albany, Sept. 3d, 4th, 5th and 6th. All information on the subject can be obtained of B. P. Johnson, Sec'y, Albany. A copy of the list of Premiums, Rules, &c. can be examined at the Hall of the Maryland State Agr. Soc'y.

The Montgomery Co. (Md.) Agricultural Society holds its annual Exhibition at Rockville, on the 2d Thursday of September, 1850. The list of premiums is very liberal, and the indications are, that

there will be an unusually interesting exhibition.—The Society have appropriated \$100 to purchase a Chemical Apparatus, and we learn from the report of the chairman of the Committee of Arrangements, that the services of a competent chemist will be secured, "who, for several weeks previous to the day of Exhibition, will be in Rockville to receive and test such specimens of soils as may be presented to him. The very able committee, under whose direction he will act, insures the correctness of his work. The committee will be present at the Fair and explain the result of his analysis. This explanation will at once render this branch of our proceedings both interesting and instructive. It is also expected that the State Chemist, (Dr. Higgins) will be present on the occasion."

The Prince George's Co. Agricultural Society holds its annual Show at Upper Marlboro', on the 30th and 31st October. The list of premiums is on the usual scale of this spirited society.

Charles Co. Agricultural Society has announced its list of premiums for the Fall Show, which are also on a liberal scale, and the success attendant on the last exhibition, will no doubt stimulate to a still greater show the coming Fall. The time, we believe is not yet announced.

A PERMANENT PASTURE.

We have been asked, "what grass seeds we would sow to form a permanent pasture, and in what quantities per acre?" Our reply is: In the first place, we would sow in the month of August, after having first manured the land well, ploughed it deeply, harrowed and rolled it thoroughly, so as to bring it into the finest possible tilth, 10 lbs of timothy seed, $\frac{1}{2}$ bushel Kentucky blue grass seed, 1 peck red top grass seed, 1 bushel of Orchard grass seed, $\frac{1}{2}$ bushel of Perennial Rye grass seed, and 1 qt. Sweet scented vernal grass seed.

The above grass seeds to be thoroughly mixed together before being sown, and, when sown, to be lightly harrowed in, and rolled.

If the ground had not been recently limed, in the course of the winter, when the ground was sufficiently hard from frost to bear the team without injury, we would haul on and spread 50 bushels of lime, or 100 of marl per acre.

In the succeeding spring, when the frost was fully out of the ground, we would sow on each acre 8 lbs Red clover seed, and roll that in, so as to cover it, and consolidate the ground. A pasture thus formed, should be permitted to remain for the first year ungrazed and untouched by the scythe. If thus managed, it would form a permanent pasture—one which would last for a life time—of the most luxuriant character; provided every second year it was treated to a top-dressing, in which a bushel of salt to the acre formed one of the elements. Whenever top-dressed, the pasture should be harrowed and rolled. He who forms such a pasture will have done an act of justice to his stock, obeyed the promptings of humanity, set an example to his neighbors, and cannot fail to put money in his pocket.

SALE OF SHORT-HORN CATTLE.—We again refer to the advertisement of the sale of Short-horn Cattle owned by Mr. Sheafe, which is to take place, without reserve on the 29th August, at the village of New Hamburg, near Poughkeepsie, Dutchess Co. N. Y. This it is believed, is one of the finest herds of Cattle ever offered in this country. The catalogue can be examined at our office.

THE CROPS.—At the time of penning our notice of the harvest, for our last number, there had seldom been presented a fairer prospect for an ample reward to the husbandman, for his labors; but our journal had not left our hands, after being printed, before we began to receive accounts of a sad reverse in the wheat crop. A few days before the harvest fully commenced, the Rust struck the growing grain, and the consequence has been most disastrous to many, and the crop in the largest portion of Maryland will probably not average more than two thirds of the anticipated yield. The western counties of the State, generally, have escaped this disaster, and the yield will be a full crop, perhaps more than an average, and the grain very full and plump; but in almost every other section, the injury has been very great.

In Harford, the Republican says, that in the late wheat particularly, many fields had been totally ruined, in a few hours.

In Prince George's, the Gazette says, that the wheat crop which promised so fair a few weeks since, is found to be seriously injured by the rust, and will be far from an average crop.

In Baltimore County, the same results have been experienced—and our accounts from St. Mary's and Charles, are of the same tenor.

On the Eastern Shore, the effects of the Rust and Fly, have been very disastrous. The Centreville Times says, that in some parts of Queen Anne's, the wheat is so much injured by the rust, as to be wholly worthless, and therefore given up to the stock, which is turned in upon the fields—the crop will not be more than half the usual yield, and that of an inferior quality.

In Kent and Caroline, the like results have been experienced—and in Talbot and Dorchester, the accounts are also very disheartening. A friend in Talbot writes us, that there will not be one-half a crop in that county—and another in Dorset, under date of July the 6th, says, that “the wheat crop presented the most flattering prospects, but these have been blasted within a few weeks past—early in the spring, the Hessian fly made some threatening demonstrations in Dorset, but did no serious damage, as I believe, among the best wheat fields, and its injury partial; but within a short time past, other diseases have been fatal to the wheat grower's hopes; the rust has made the most general sweeping destruction; the rich and the poor fields have been equal sufferers; many will not justify the cost of harvesting, and will not be harvested, as the grain is utterly worthless; much smut, too, adds to the calamity, and lastly, did science permit us to yield up our preconceived notions of the laws of nature, and to relinquish our dogmas, when stubborn facts oppose them, we might almost be inclined, from the immense quantity of darnel every where developed in the wheat fields, to believe that the very unusual deluges of rain, so often repeated, and continued during the season, or some other offending agent, had operated to impair the true plant, and transmute it into worthless darnel.”

It appears that the early wheats have been the most successful—the Mediterranean particularly, has fared much better than most other varieties.

The crop in Pennsylvania has turned out well, and the accounts from the West, state, that the recent rains after a long continued drought, had put a new face on the appearance of the wheat, and a full crop would be harvested.

In Virginia, North Carolina and Delaware, the damage has been very great—our letters from vari-

ous counties, all give the most unfavourable reports; very similar to those received from the Eastern Shore of our state—The Southern Planter, says—“Of the different varieties seeded, two kinds have decidedly gained pre-eminence, wherever we have travelled or heard from—the improved early purple straw and the wheat known as “Woodfin” in this vicinity, as “Maryland blue stem,” “Poland,” “early white purple straw,” &c. in other communities. The former, a red wheat, was earlier in maturing and did not catch so much rust.”

The corn crop has also been much injured by the storm which was experienced in July—It was prostrated in every direction, and cannot be expected to mature so well—In North Carolina, the effects were very disastrous, but it is now thought that half a crop will be raised if the weather continues favorable—The most forward corn suffered most.

The prospects of the Tobacco crop continue very unpromising—this is not confined to Maryland alone, but to all the Tobacco growing States—In Virginia the effects of the drought has been unprecedentedly disastrous.

The Oats crop also, has suffered much, and the crop cannot be expected to be an average one.

TO CORRESPONDENTS.

The 2d No. of the series of papers on Guano, by J. Du Val, of King & Queen Co., Va., was received too late for this No. It shall appear in the Sept. Farmer, and will be found extremely interesting.

Various other favors circumstances compel us to defer, notwithstanding the issue of an extra sheet.

The 2d No. of the Essay of Edmund Ruffin, Esq., on the subject of Draining, will be found in our pages for this month. The accession of Mr. Ruffin to our list of regular correspondents, has been hailed with much satisfaction by our patrons and friends—and the papers from his pen alone, which will be published in our present volume, will, we can safely promise, be worth far more to every subscriber, than the amount of his subscription.

BEAUTIFUL WHITE WHEAT.—W. Chamberlain, Esq. of Talbot Co. Md. has sent us a few grains of “New York wheat,” taken from a fair sample of his crop. We have seldom if ever seen a handsomer sample of wheat than this, and have written to Mr. C. to forward a lot of it to this city for seed, as he will have some for sale, at what price we have not yet understood. He has also some of the “Blue Stem” which he says is equally as good as the sample of “New York” received. The crop of Mr. C. escaped the rust which has played such havoc with the wheat in his county.

LIBERALITY—WORTHY OF IMITATION.—The State Society furnishes to all exhibitors of Stock, at its Annual Exhibition, the hay and straw necessary for the purposes of their animals. This item in the expenses of the Society is a heavy one, and it having occurred to one of our enterprising and public spirited citizens, (John Q. Hewlett, Esq.) whose farm lies near the city, that the farmers near Baltimore, many of whom farm it as much for pleasure as for profit, could, with but little inconvenience, or disadvantage, furnish the necessary provender at the coming exhibition, has offered the Society, a load of hay and one of straw, free of charge. Although we are sure that he had no expectation of his name being publicly connected with the proposition, yet we feel not at liberty to withhold it, as the suggestion is original with him.

\$2,076,707,637 FOR WAR—NOTHING FOR AGRICULTURE.

Mr. Sumner, in a recent address before a Convention held in Massachusetts, stated that from the adoption of the Federal Constitution, down to 1848, there had been paid directly from the National Treasury—

For the Army and Fortifications, - \$366,713,209
For the Navy and its operations, - 209,994,428

Making a total, - \$576,707,637
Estimated cost of the Militia in service during the same period, - 1,500,000,000

\$2,076,707,637

Now armies and navies are necessary under all forms of government; so are fortifications, as the best way to preserve peace, is to be prepared for war, weakness often inviting aggression; but while those lavish expenditures have been made for purposes of war, it is somewhat singular, that our servants have never thought agriculture of sufficient importance, to appropriate a single dollar towards advancing its interests. Farmers and planters, in times of peace, are called upon for taxes to support the government, which they cheerfully pay—in times of war they peril their lives in defence of their country,—and yet but little has been done by the government, directly, to improve the agriculture of the country, or elevate the calling of the husbandmen of the land. Thousands of millions to teach men how to send their brethren, by the shortest cut, to eternity—but nothing to lend the aid of science to the first and noblest of human arts! Nothing for that art which sustains all other arts!! Millions have been expended in the establishment and support of Academies and Schools for the Army and Navy; but not a dollar for Agricultural Institutions!!! And yet we would defy the greatest constitutional lawyer in the nation, to point to any section of the constitution, either of a direct grant of power, or as an incident, that would justify the one and deny the other.

The State Legislatures, with a few honorable exceptions, have been equally remiss, and our own among the rest. At the last session, the State Agricultural Society memorialized the General Assembly of Maryland, to pass a law taxing dogs, as a protection to sheep raisers—the law as prayed for, would have interfered with the rights of none but those who kept an unnecessary number of worthless curs—they asked also for an annual appropriation of \$500, to aid the Association to carry out its great improvements in the agriculture of the State. Reasonable as were the prayers of their memorial, they were not only not granted, but no notice was taken of them—no report made. We desire to reflect upon no one; but we feel it our duty to say, that be the fault where it may, it was a grievous one, and should be made to fall grievously upon the shoulders of the culpable parties. And we will here take occasion to add, that if farmers wish justice done them, they must act in concert as a class, and exact justice at the hands of their representatives. Apathy on the part of Agriculturists, begets indifference on the part of their public servants—the only way to secure action—to obtain what may be wanted and asked for, is, to make them feel and know that denial will be no longer tolerated.

✍ Mould is the soul of land.

CONSTITUENTS, AND THE VALUE OF CATTLE URINE.

"The more exact analysis of *Cattle Urine*, by Sprengel, who has devoted particular care to the subject, gives as the average of many trials, the following, in 1000 lbs.

Water	926.24
Urea	40.00
Albumen	.70
Mucus or slime	1.90
Hippuric acid	.90
Lactic acid	5.60
Carbonic acid	2.56
Ammonia	2.05
Potash	6.64
Soda	5.54
Sulphuric acid	4.05
Phosphoric acid	.70
Chlorine	2.72
Lime	.65
Magnesia	.36
Alumina	.02
Oxide of iron	.04
Oxide of Manganese	.01
Silica	.36
	1000.00

Let this be now compared with the standard of value, cow dung. 100 lbs. of that afford 2 lbs of Carbonate of ammonia, while this evacuation gives 4 lbs. of ammonia in its urea, besides that in its other ammoniacal salts.

The quantity of liquid manure produced by one cow, annually, is equal to fertilizing 1½ acre of ground, producing effects as durable as do the solid evacuations. A cord of loam saturated with urine, is equal to a cord of the best rotted dung. If the liquid and solid evacuations, including the litter, are kept separate, and soaking up the liquid by loam, it has been found they will manure land, in proportion by bulk of 7 liquid to 6 solid, while their actual value, is as 2 to 1.

100 lbs. of cows urine afford about 8 lbs. of the most powerful Salts which have ever been used by farmers. The simple statement then, in figures, of difference in value of the solid and liquid evacuations of a cow, should impress upon all the importance of saving the last in preference to the first. Let both be saved. If the liquids contained naturally geine, they might be applied alone. It is the want of that guiding principle which teaches that salts and geine should go hand in hand, which has sometimes led to results in the application of the liquor, which have given the substance a bad name."—DANA.

A friend in Richmond, Va. who has been instrumental in extending our subscription list, says:

"I wish you would get some of our James River, tide-water farmers enlisted as correspondents, upon the cultivation of crops, and the system of cultivation—it would be interesting to many of your subscribers; would more widely introduce the paper, to the tide-water regions—that is, all James River, below Richmond—my friends Hill Carter, Jno. A. Seldon, W. B. Hanson, and many others, would be useful to 'the Farmer,' as well as to the subscribers, if they can be induced to write for it—they are high authority upon the river."

The public spirited gentlemen named by our friend we hope will respond to this call—The time has now arrived in which every philanthropist must and will

admit, that good can be done to our fellow men, by urging upon them to embrace the advantages with which Nature, and Nature's God has invested them. We hope the example of Mr. Ruffin, will induce Messrs. Carter, Seldon and Hanson, as well as other well known successful agriculturists and writers, to aid in the glorious work now so bravely pushing forward.

LANDS IN VIRGINIA—THE FARMER, &c.

Clay-Hill, Amherst, Va. June 12th, 1850.

To the Editor of the American Farmer—

DEAR SIR:—You will find two dollars enclosed, one for my own subscription for the "Farmer"—from this month, (6th volume,)—the other for the same, to be addressed to Thos. H. Crone, Tobacco Row, Amherst County, Va. (the same office at which I receive mine). Mr. Crone is one among a dozen enterprising farmers from your State, who have settled in this county, within two years past, and who are truly very great accessions to our farming interest; they find it profitable to sell Middletown Valley land at high prices, and purchase lands among us of original fine quality, at low rates;—we have superior red lands stretching along the base of the mountains, within ten miles at any point of some point on the James River and K. C. Canal—selling at prices ranging from \$6 to \$20, according to location, condition of culture, improvements, and degrees of original fertility. Lands of the same descriptions sell on either side of us—for instance, Bedford county land, west, and Nelson, east, for from 50 to 150 per cent. higher, merely from the fact that there has been longer an interest felt in strictly agricultural pursuits in those counties than this; the culture of tobacco has continued to waste and impoverish our fine soil, while other counties have been awakened to their true interest and are leaving us in the race; but a spirit of improvement is now among us, and judging from the extreme adaptation of our soil to clover, and its susceptibility to permanent improvement, we will rapidly regain our position beside Albemarle, Loudoun, and other counties of this Piedmont section, possessing not one natural advantage over us.

I have solicited Mr. Crone's subscription in accordance with your suggestion contained in this month's issue, and shall endeavor to procure others, because I believe as you succeed, so will the agricultural interest, your pages being to thousands, (as myself for one,) the talismanic guide to the profitable, as well as pleasant, prosecution of agricultural pursuits; though my interest in farming occupations is small, yet, through you, it has become greatly enhanced. Allow me to hope that your efforts in behalf of agricultural education may be redoubled, and meet with success.

Our wheat crop is promising fair, but I hear adverse accounts from some counties; corn is very late from so wet a spring as we have had; tobacco plants very small, in places destroyed by fly; planters begin to fear having to curtail their crops very much.

With many wishes for your success, I am truly your friend,

ROY B. SCOTT.

EXPERIMENT WITH GUANO.

Essex County, Va., July 4, 1850.

To the Editor of the American Farmer—

SIR:—I must confess that I have been skeptical in relation to the various accounts of the fertilizing properties of Guano, especially in these times of

humbaggery, and therefore determined to subject it to the most rigid test. In view of this, on the 3d of October last, I selected two acres of land by actual measurement, proverbially poor, never having yielded in a course of ten years cultivation more than three bushels per acre, and in consequence, was called by way of derision, "Old Kentuck." To these two acres, 560 lbs. of Guano were applied in the most injudicious manner, by strewing it on the top of the corn-bed—the consequence was, when the wheat was ploughed in, and came up, a small girth was only seen on the top, and a space between each row at least one-third of its width; in this condition it remained until about the middle of November, when it had so sensibly disappeared, that it attracted the attention of one of my neighbors, who remarked to me, that at least one half of it had been destroyed, in which opinion I concurred; in examining that which remained, we were of opinion that three-fourths of it had from three to ten flies in the maggot state on each stalk; in this state of things I surrendered all hope of any tolerable return, the more especially as the rust made its appearance in it a short time before it ripened.—Now for the result—

The 2 acres of land yielded me 32½ bushels of wheat	at \$1 per bushel, - - -	\$32 25
Deduct for average yield of the above		
2 acres, 6 bushels, at \$1 per bush. - - -	\$ 6 00	
Deduct for cost of 560 lbs. Guano, - - -	12 70	
		\$18 70
		\$13 55
Add for additional straw, - - -		50

Clear profit, - - - \$14 05

P. S.—Owing to the prevalence of rust and smut in the wheat this year, burning and liming will be resorted to. Can you inform me whether the lime will be prejudicial when Guano is intended to be applied?*

Yours, respectfully,

RICHARD ROUZEE.

*Question answered in last No.

MR. BURGWIN'S EXPERIMENTS.

Jackson, N. C. July 15th, 1850.

To the Editor of the American Farmer—

SIR:—Allow me through the medium of your valuable periodical to correct two errors of print, which have crept into the publication of my remarks on the "improvement of worn out lands." I am made to say—"From experience in the use of both, I think peas not inferior to clover as a specific manure for wheat." It should be—"but little inferior to clover," &c. The long, rich tap root of clover by its decay, affords a food for wheat which no part of the pea can supply. This tap-root operates beneficially also, by penetrating the earth deeper, and in decaying, leaves a vegetable deposit to a greater depth, affording what Col. Fremont would call a "cache," or hidden magazine of provision for future plants.

On the next page, it reads—"For three years I have never fed my working horses on grain or fodder from the middle of May till the clover fails;" it should be—"but once a day." I always feed once a day on hominy, (preferring it much to uncracked corn,) turn my horses into the clover fields after their day's work, and they are again put to work the next morning, with no other attention than waiting, having been curried at midday, instead of at night,

as is done during the shorter days of fall and winter. Nature, by the production of *vegetable* food for the lower animals in the spring, thereby indicates a change from the stronger and more heating diet of grain, to be proper for them; who has not observed our cattle, turning from the dry food of the winter, to feed on the young grass which is yet not so strengthening? It is very true, they must not be allowed to feed exclusively on this, if so, they suffer from disordered bowels; work horses particularly, must not be too much exposed to this temptation. We see an entirely analogous case in ourselves. Nature produces for us a great variety of vegetables in the spring, our appetites cause us eagerly to enjoy these, in consequence our blood becomes thinned, our systems purged from the grosser juices that circulate during the winter, and we are better prepared for the heats of summer. Since writing the piece referred to, I have added the experience of another summer to this plan, and though in consequence of the freshet in May, I had to replant 200 acres of corn, and to add to my corn crop 230 acres more of destroyed wheat, all of which was fallowed with three horse ploughs, running 8 to 10 inches deep, my team of 10 three horse plows were enabled by this plan of feeding, to stand the increased tax upon their endurance, with the exception of a few of the weaker animals. Thus I am more than ever satisfied with the plan. It is true, my teams are strong, but he who keeps *inferior* animals on his estate, acts unwisely.

While I am writing, let me give my testimony as to the capability of our region of country, for raising the finer grasses: I have been seeding the following grasses for several years, and have never failed when sown on good soil, and that put in good order, to obtain and *retain* a good stand, viz.—clover, timothy, herds-grass, Kentucky blue grass. When proper attention is not paid to the selection of a suitable soil, &c. &c. as in every thing else, a failure, or only partial success is the result. My experience proves to me, that the month of September, or early in October, is the best time to sow grass-seed in our climate. If sown with wheat, and on rich land, it may, by its luxuriance, affect the product of the wheat, and clog the reaping machines, but your stand of grass is more sure. The result of my this year's experiment, may be interesting to you, and, perhaps, encourage others to similar attempts, I will therefore, shortly state it. Having about 150 acres of my wheat, this year, sown upon last year's corn land, and the land being rather light, and not too rich, I feared lest I should fail with my grass sown on this wheat, because of the two successive cereal crops, I therefore bought guano, mixed it with its bulk of plaster, then added fine charcoal, the same, and to this mixture double the whole bulk of deposit of the Roanoke river, a rich alluvial earth, and sowed the whole broadcast in February and March, and harrowed it in, on top of the wheat. I sowed at the rate of 300 lbs. of guano to the acre; the value of this, no doubt, was doubled by the mixture with the absorbents of the ammonia, as I was extremely careful, in the manipulation, to cover the guano with several inches of the plaster, &c. to prevent the escape of the ammonia, even when left for a few hours, as it is exceedingly volatile and easily dissipated by the March winds. On this wheat land, I had sown a October previous, clover, timothy, Kentucky blue grass, and Italian ray grass. My harvest has been over, it is now three weeks, and I have never had a *fine* stand of all these, even on our rich bottoms.

The ray grass, matured its seed, rather sooner than the wheat, was two-thirds as tall, and where *very thickly sown*, materially injured the product of the wheat. I have reaped an increased product from my wheat, amply sufficient to repay my outlay for the guano, plaster, &c., and have my grass as my *profit on the investment*; this in turn will shade and improve my land, fatten my stock, increase my crops, and cheer my eye with "grassy slopes," in place of "galled hill sides;" this is profit sufficient for the most greedy if turned to a proper account;—be it remembered, too, this was a light and rather poor soil, but based on a good clay sub-soil. I send you herewith a stock of timothy of this spring's seeding—grown, however, on the low grounds, that you may judge in some measure for yourself—with it is a stalk of grass, for which I can find no name about here, it would seem to be very valuable—stock eat it with avidity: can you or any of your friends tell me what it is?

I write "con amore" on this subject. If I have been too prolix, curtail as you think proper, but rectify the errors of print I refer to. I have not time to copy. Very respectfully, yours, &c.

H. K. BURGWIN.

* We believe it to be the *Alopecurus pratensis*—the meadow foxtail—a grass which is esteemed in England as one of the best for hay and meadow.

The specimen of timothy sent us, was, indeed, of most luxuriant growth, measuring fully 4 feet, with a long and massy head. An acre of such grass, thickly set, would yield three tons of hay.

Although we believe the errors alluded to by Mr. B. were not our own, but were caused by copying from another source, we are glad they occurred, as it has been the means of our being favored with a detail of the very interesting experiments which accompany the correction.

KICKING HORSES.

To the Editor of the American Farmer—

For the benefit of those who may have kicking horses, I will describe a plan made use of by me for the purpose of breaking a horse of this habit. I attach one end of a strong line to the hind pastern of the horse, and take it forward through the loop, fastened to the trace, at the side of the horse, and attach the other end of the line to the bit of the bridle; a line attached thus at each side of the horse, if left sufficiently long to just enable him to make a step, will at every kick he may make, operate so severely upon his mouth as to cause him very soon to give it up as a bad job.

Adams Co., Pa.

DANIEL D. GITT.

DRAINING TILE.—A correspondent in S. Carolina asks for information as to the manner of making draining tile, the kind of material used, the best length of the mould, and the manner of burning.—Will some correspondent furnish us with the desired information?

We are indebted to Hon. Senator Pearce, of this State, for a copy of the message of President Taylor, transmitting a memorial of Count de Bronno Bronski, in relation to an improved breed of Silk Worms which he desires to have introduced into this country. The importance of the subject of the memorial, will induce us to publish it, with the accompanying documents, at as early a day as can be found convenient.

VALLEY AGRICULTURAL SOCIETY OF VA.

By the following it will be seen that an Agricultural Society has been established in the rich valley of Virginia.—We learn that it has been gotten up with great spirit, and that an Exhibition under its auspices, will be held this Fall.—Upon the officers of the society, much will depend for its future success—if the head does not evince zeal and industry, our word for it, the body will not be likely to take the lead.—We hope, therefore, the gentlemen who have been honored with the responsible trust confided to them, will not consider it as an empty compliment—for we assure them, that they will find that there is *work to be done*, and they are held responsible for the doing of it. If they do their duty, those whom they represent will hardly fail to come up to theirs.

Charlestown, Jefferson Co. Va. May 23th, 1850.

To the Editor of the American Farmer—

Sir—On Monday, May 20th, there was a meeting of the Valley Agricultural Society of Virginia, embracing the fine counties of Jefferson, Clarke, Frederick and Berkley. The Society was organized by the election of the following officers.

President—Lewis W. Washington of Jefferson.

Vice Presidents—Hon. Richd. Barton of Frederick; Hon. C. J. Faulkner, of Berkley; A. R. Boteler, Esq. of Jefferson; T. F. Nelson, Esq. of Clarke.

Secretary—R. W. Baylor, Esq.

Corresponding Secretary—Dr. R. Blackburn.

Treasurer—Andrew Kennedy, Esq.

Board of Managers—Jas. D. Gibson, Esq. of Jefferson; Thomas C. Pendleton, Esq. of Clarke; Martin Eichelberger, Esq. of Jefferson; Francis Peters, Esq. of Berkley; John F. Walls, Esq. of Frederick.

MIXTURE FOR AN ACRE OF WHEAT.—Those who may be disappointed in obtaining a supply of Guano for their wheat crop, may find a very excellent substitute in the following. The proportion is for an acre, and will ensure a good crop.

Take 2 bushels of bone-dust, 4 bushels of ashes, 25 lbs Nitrate of Potash, 25 lbs Nitrate of Soda, and 50 lbs Common salt.

Mix the whole well together, sow broadcast, harrow it in, and roll.

The above will produce as good a crop of wheat as would a dressing of Guano, is cheaper, and is more pleasant and equally easy to sow. Try it and you will find what we say true.

THE PLOW, LOOM AND ANVIL.—Our venerable friend Skinner has commenced a new volume of his journal; it maintains with great vigor those principles, upon the adoption of which, the editor contends, the prosperity of American Agriculture is most intimately blended. We refer the reader to the advertisement on our advertising pages, and call on every friend of the old veteran and the cause he advocates, to lend him a helping hand.

LARGE FIGS.—We have received from Benj. Seegar, Esq., of Kent Island, several Figs, grown on his farm near Annapolis—they are the largest and finest we have ever seen. We learn that they grow very luxuriantly on the farm of Mr. S., and we should suppose they might be turned to a good account. Many of the finer varieties of fruits should have more attention paid to them in the neighborhood, south of our city—no section of the country, we should think, could be more suitable for their production than the southern range of counties of Maryland, and the Eastern Shore.

FLOWERY FIELDS.

In the month of June, I took several rides in various directions. Upon one occasion, I rode out the Harford turnpike as far as Herring Run, and on either side the road, after passing the turnpike gate, I regretted to find the fields filled with Daisies and Carolina pinks, both in bloom. Returning on that road as far as the gate, I took the Hillen Road, but had not rode a quarter of a mile before I beheld on my right, the fields of a country seat literally carpeted with Carolina-pinks—thinks I to myself, the owner must be a florist, and is raising flowers for sale, or, possibly, has been engaged to supply all the seed stores in the Union with seed of this ornamental pest. The fields from this point, as far as Townsontown, were pretty well sprinkled over with the same weed. On a field to the left of the road before I reached Crowel's, where an elegant mansion has recently been erected, I scarcely knew whether most to admire the beauty of the mansion, or the floral display of the field, by which it was surrounded: perhaps the latter sentiment would have prevailed, if I had not known that such exhibitions were not evidence of notability in farming. Having left Townsontown, I came as far down the York Turnpike as Govan's town, and regretted to see that the same Carolina pink was the undisturbed possessor of almost every field on the road. At Govan's-town, I took the road leading to the Fall's Turnpike. Through the better part of the way to that road, I noticed the same partiality had been shown to the Southern beauty; for, with a few honorable exceptions, he was part and parcel of every spot in cultivation—one field in particular, a short distance beyond the Academy, on the same side of the road, had enough growing on it, should the owner be as careful in saving the seed, as he has been in cultivating the plant, to supply all Baltimore county with seed.

To be serious, I think the owners of such estates should feel themselves called upon by considerations of moral duty, to devote themselves seriously to the work of exterminating these nuisances. No one should permit a single plant to go to seed, and I will state, that, unless all enter zealously as collaborators in the good work, it will be unavailing for a few to attempt it, as the plants on a single acre on one farm, if permitted to mature their seed, will furnish enough to fill a dozen surrounding farms.

A FRIEND TO CLEANLY FARMING.

GLOUCESTER Co., June 1st, 1850.

To the Editor of the American Farmer:

DEAR SIR:—You recommend sulphate of Lime as the best fixer for the Ammonia in Guano. How do you reconcile this with the known affinities of sulphuric acid for the two. Yours truly,

GLOUCESTER.

This is easily reconciled. It is true that sulphuric acid has an affinity both for lime and carbonate of ammonia, but its affinity for the latter is greater than for the former, and hence, when Sulphate of lime and the carbonate of ammonia, the volatile substance in Guano, are placed in contact, mutual decomposition takes place, the ammonia liberates itself from carbonic acid with which it is united, and obeying the laws of affinity forms a union with the Sulphuric acid of the plaster, while the carbonic acid from which it has separated itself, forms a similar union with the lime that has been disengaged from the Sulphuric acid, so that the Carbonate of ammonia is transformed into the Sulphate of ammonia, becomes

a fixed body, while the Carbonic acid which had separated from it, unites with the lime, one of the components of plaster, and forms the Carbonate of lime.

Action of Guano, Bones, Poudrette, &c.

Baltimore, July 17th, 1850.

To the Editor of the American Farmer.

SIR:—I promised, some time past, to give you in writing the result of my experiments with the different sorts of "bought manures."

You are aware of the fact, that nearly all of the "bought manures," (as they are termed,) are looked upon by farmers very dubiously; and I can assure you that it is well, as it regards many of these manures (so called at least,) that this opinion of them, does obtain among farmers, else many of us would have paid dearer for our "whistles" than would have been desired. Already there are some "burnt infants" among us: hence the skepticism of farmers, as to there being really any "new," and at the same time "true thing under the Sun."

Since 1843, I have been trying to find out which is the best of all these "new things," and have now, after having been very considerably "humbugged," settled down upon Bones and Guano—although even the last named in a very dry year, has also "cheated" me; but this is by no means its character, as I am constrained to admit, that after having tried it on all sorts of soil, and perhaps as long, if not longer than any other person in the State, it is my opinion that when properly applied, with an average fair season, it is a very powerful fertilizer. My mode of using it, is, when applied on Tobacco, to mix 1½ bushel of the Peruvian (which is ordinarily 100 lbs.) with one bushel rich earth, and 1 bushel Plaster, which admits about the 1-5 part of a gill of the mixture, to each hill for every 5000 hills—and putting it in the centre of the check before being scraped—so that when the hill is made, it lies beneath the plant. On wheat, I apply three bushels of Peru. Guano, equal to 200 lbs. mixed with 1 bushel Plaster, 1 bushel rich earth to the acre, sowing on the surface and plowing it in as soon, and as deep as possible, after it is sowed. The past spring I have put 300 lbs to the acre, on 30 acres Corn—being half of a field, on a farm in Calvert, mixing with it the same quantity of rich earth and Plaster, and sowing on the surface, plowing in at once very deep, using the Cultivator only in working it afterwards.

I do not intend to use it at all, with Corn, hereafter, and not because I do not think it also a good fertilizer with this crop, (as my Corn on my Calvert farm, upon which it has been used, now shows very fair,) but only because it has never failed to pay me three-fold better on wheat, than on any thing else. In order to test its virtue, it is essentially necessary to plow it in deeply, and stir it as little as possible afterwards.

Bones.—Of these I have used both ground and crushed, and always to advantage at 10 to 20 bushels per acre; bought from manufacturers here, and agents of houses in New York; but am using the crushed, dissolved by oil of vitriol, as prepared by myself on my farm in Calvert in the following way: The bones (which we buy in the neighborhood at 50 cents per 112 lbs.) after breaking them with a small sledge hammer on an old anvil, we put at the rate of 3 bushels in one-half of a hhd. and apply to that quantity 75 lbs. oil of vitriol, filling up the half hhd.

to within 8 inches of the top with water, letting them remain (but stir the contents occasionally with a stick) say 2 to 5 weeks, according to the quality and strength of the vitriol; then start the contents of the half hhd. into a large iron kettle, apply a slight fire and the whole contents will in less than an hour be reduced to a perfect jelly. We use two half hds. at once, to prepare it expeditiously.

We then mix the contents of each kettle, with a horse cart load of rich earth, or ashes, throwing in a half barrel Plaster, mix or compost it handsomely, and use at pleasure, on an acre of land with any crop you choose, and you will have permanently improved two acres at the following cost, viz:

Bones,	\$1 50
Vitriol,	3 75
Plaster,	1 12—\$6 37 or \$3 18

per acre, and this may be repeated so as with proper attention, as much lasting improvement may be made each year as many farmers derive from their barn yards. Bones in any form never fails to show their striking effects on clover and other grasses—but either bones or guano will scarcely ever fail to produce a better crop of clover, which, with the increased quantity of straw, (particularly when guano is used) will enable and encourage the saving of larger quantities of barn yard manure, and which must inevitably cause a lasting improvement.

Poudrette I have used also to good advantage, particularly on clayey lands, at the rate of 6 to 8 bbls. per acre—(Mr. Baynes of this city prepares the best article, I think, ever made, certainly superior to any I ever used.) It is a first rate top dressing on young clover in spring at 2 to 3 barrels per acre; this article has been prepared so badly heretofore, that a great quantity of it was really worthless. Mr. Baynes will, I hope, raise its character.

"Agricultural Salts," "Generators," and "Regenerators."—Of these, what shall I say—I have tried them on Corn, Wheat, Oats, Clover and Tobacco—but have yet to discover that they ever generated any thing for me, though I have heard them sometimes well spoken of.

I will bring this long article to a close by stating, that although I am now using large quantities of "bought manures," and have done so since 1843, yet every year's experience only increases my confidence in the barn yard system, which I never in the least abandoned; and am now making greater efforts than ever, to increase my quantity of barn yard manures annually.

I must not overlook "**Ashes and Lime**," these, however, speak for themselves—they want no trumpeter. If you wish grass and clover, and can haul these, buy them (at a fair price) before every thing else; my farms are too far from tide water, to haul them advantageously, though I have used both partially, and always with signal success.

Yours, &c.

ED. REYNOLDS.

PENNOCK'S DRILL.—A transposition in our Pictorial sheet of the cuts representing the wheat drilled in, and that ploughed in, renders it necessary to republish Messrs. S. & N. Pennock's engravings thereof, which are accompanied in our advertising pages by sundry testimonials in favor of their drill. Messrs. P. write us, that they have within a few days received letters patent for very important improvements upon their Drill, which add very much to the durability of the machine, as well as simplifying it, and adding to the convenience of transportation and storage.

WORK IN THE GARDEN.

Spinach.—During the first and second weeks of this month, prepare beds, by manuring, careful digging and raking, and sow spinach seed. By attending to this advice, you will secure plentiful supplies of this excellent vegetable for use in the months of September and October. Towards the last of the month, sow another bed for early spring use.

Radishes.—Throughout this month, sow Scarlet, Short-top, White and Black Spanish Radish seed. The two former should be sown early in the month, the two latter towards the last of the month.

Asparagus beds should be kept clean.

Turnips.—Sow a bed of turnips the first week in this month.

Celery.—Set out your Celery plants intended for a late crop.

Small Salading, of all kinds.—Sow seed of this description at any time throughout the month.

Peas.—Drill in a few rows of garden peas early this month, taking care to select a rather shady spot for the purpose.

Beans.—Kidney beans may be planted any time up to the 15th of this month. If the weather should be dry see that your gardener makes a liberal use of his watering pot.

Lettuce.—Set out lettuce plants for heading, and sow seed for a successive crop. Don't forget to have each watered.

Endives.—Tie up your forward crop, set out your plants, and sow seed for a late crop.

Melons, Cucumbers, &c.—Keep the beds on which these grow clean.

Herbs.—Such of your herbs as may be in flower should be cut and dried in the shade.

Lima and Carolina Beans.—Have these hoed.

Cabbages, of all kinds, must be kept clean—set out what plants may be in the seed beds.

Weeds.—Let it be a matter of pride with you never to let one of these go to seed in your garden.

Budding.—Cherries, Plums, or any other fruit trees, may be budded in this month, provided the bark parts freely from the stock.

Inoculation.—In the early part of this month pears should be inoculated, apples, peaches, nectarines and the apricots may also be inoculated any time from the beginning of this month to the middle of next.

Dahlias.—If you wish a fine bloom of your Dahlias, give them a watering with soap suds once a week during this month.

Watering in dry weather.—See that all your vegetables are thoroughly watered during times of drought. If to the water you add the suds made in your wash-house, you will greatly add to the luxuriance of your vegetables.

Strawberry Seed.—If you wish to originate a seedling strawberry, select a border which you can protect through the next winter, and sow seed of some choice kind. Keep the bed well watered in dry weather.

Potatoes.—Have these kept clean: if you have not done so already, mix up equal quantities of lime, ashes, salt and plaster, and give them a good dusting: have this done early in the morning when the vines are wet with dew, or just after a rain.

FLORAL DEPARTMENT, FOR AUGUST.

Prepared by John Feast, Florist, 279 Lexington st. for the American Farmer.

Owing to such a dry season, particular care is required to keep all plants in pots, even in ordinary health, as they are so liable to be attacked with the

red spider, which has been so general, that, with the most frequent syringing and attention, it was almost impossible to keep them clear of it during the past month. The spider has been worse than in any previous year that can be recollected; plants have been unable to come to maturity—even buds have been blighted before half expanded, and plants of all kinds in and out of pots, have suffered in this neighborhood beyond description.

Achemenes will be in fine bloom at this time; by keeping them in a shady situation and moderate watering will ensure their blooming most of the summer—also *Gloxinias* and *Gesnerias*, treat in the same way.

Camellias may be inarched, if not already done; prepare stocks suitable and healthy, and keep them shaded from the sun—syringe frequently, which keeps the plants in good health, and all such as want re-potting, or fresh drainage, may be done before they make their second growth; they make better roots before the winter, and it ensures a much finer bloom—have the plants neatly tied up to rods, and any shoots or decayed parts cut off, and apply a composition of bees-wax and tallow, mixed together, and cover the wound neatly to exclude the air.

Geraniums cut down, and put in cuttings for a stock next year—be sparing of water till they begin to grow, otherwise they will decay, which often happens by too much moisture when not in a growing state—sow seed in light rich earth, if new varieties are wanted, as the only way of obtaining a fine stock, and giving more pleasure by producing them ourselves,—by proper management they will flower next season.

Chinese Primroses will require to be kept in a dry shady place—also sow the seed, if young plants are wanted, which are preferable to those raised from cuttings—but the double varieties may be increased from cuttings.

Now is a good time to layer different Greenhouse plants, that cannot well be raised from cuttings; prepare some suitable place, not too much exposed in the open ground or boxes, and cover the ground over with a thin coating of moss; this keeps them generally moist, and enables them to root quicker, besides it is a protection from getting too dry, which proves fatal in many instances.

All the green house flowering bulbs will be in a dormant state, and should not be watered till autumn, or the time to repot for flowering. Keep them in a shady dry place, and place boards over them, or some covering; this keeps them in a good state, and also protects them from mice or other vermin.

All Greenhouse climbers will require attendance—train them to trellising or rafters, and cut out all decayed parts, and put in cuttings if young plants are wanted—plant in boxes or borders in the house; young plants of *Heliotropes*, *Stevias*, *Eupatoriums*, and such flowering plants as will give plenty of bloom through the winter—by planting early they get strong before the autumn, and give more bloom through the winter.

Sow seeds of *Cinerarias*, *Pansies*, *Minuluses*, *Auriculas*, *Folyanthus*, *Dodecatheons*, *Peustemons*, and all herbaceous plants for flowering next year, and such annuals as are wanted to bloom through winter; some *Mignonette* may be sown for an early bloom, and in succession till fall.

Chrysanthemums, large enough, put in suitable sized pots, but do not place them too close together; keep them exposed to the sun—they grow stronger, and make finer plants—occasionally give a little guano water to hasten their growth.

Roses of all varieties can be layered if not done—and cuttings put in of such as are wanted—also budding may be performed of such as are shy of propagation, as many of the Bourbons never do well on their own roots, hence budding has to be resorted to—but they can never come in competition, like on their own roots, requiring more care, and are but of short duration—but much depends on the kind of stock they are worked on.

Annuals that are too thick, transplant, and gather the seed of such as are ripe and put them away in some convenient place until at leisure to clean them.

Dahlia's will need supports to protect them from being broken down by the wind—and occasionally give them water to keep them in a growing state; or otherwise they cast their foliage and make but a sickly appearance, and flowers of inferior quality. Keep the borders clean and clear of weeds; stir the ground deep, it greatly adds to the growth of all plants, &c.

Furnished to the American Farmer, by the Secretary of the Strawberry Neck Ag. Society, of Charleston Dis. S. C.

ADVANTAGES OF RAYING SEED RICE.

BY B. HUGER, M. D., OF CHARLESTON DIS. S. C.

That like begets like, is an axiom which though not universally true either in the animal or vegetable creation, is sufficiently so to excite our attention to the selection and preparation of our seed used for agricultural purposes; yet if we refer to the practice which is pursued by most, I may say all of us, it would seem doubtful whether or not we were impressed with its importance. How rarely is it that the corn field is traversed and our seed selected from the stalks which have proved most productive and manifested more vigor and healthfulness than the neighboring stalks. But the subject to which I am anxious to attract the attention of the Society at this time is in reference to the advantages resulting from raying seed rice. No one unaccustomed to the examination of this article, could be persuaded, without ocular demonstration, that the rice which he plants, and which to the eye is pure and clean, contains at least 15 per cent. of grain utterly unfit for agricultural purposes, some of which will never germinate, and much which does, will only produce a puny and sickly plant, incapable of sustaining an abundant crop. Upon this subject I have been for several years making observations, and have acquired some knowledge.—From the best rice I make (which when sent to mill seldom requires more than 9½ bushels to make 600 weight net) threshed on the ground, and the heads of the sheaves carefully lapped and well winnowed, I usually ray out from 15 to 18 per cent. of small or hulled, or light or shelled rice, which I should think thrown away if planted. In confirmation of this statement I have brought and presented to the Society three samples of rice. No. 1 is the rice as it comes from the wind fan, and is prepared for mill. No. 2 is the hulled or small, or shelled or light grains, which the raying screen has separated from No. 1. No. 3 is the rice which has been rayed and is prepared for seed. An examination of No. 2 will naturally suggest the inquiry, can a good crop be expected when more than 15 per cent. of the seed is of necessity sickly and unproductive; is it to be wondered at that our crops are thin and the plants delicate, sinking under too much water or too much drought, and unfit to struggle with any of the various accidents and vicissitudes to which it is liable: on the contrary, should not our surprise

be that we realise as abundant as we do. Instead of (as we are all prone to do) attributing our want of success to cold mornings and nights, wet springs and hot suns, if we would begin with ourselves and recollect that our trunks are not tight, our drains not deep, our land not well pulverized, our seed not rayed and consequently not fit for use—if all these circumstances were considered and weighed, we should soon find a different state of things. Inferior seed rice is not confined to Cooper River, for I have this year purchased at a high price the best seed rice from Waccamaw that could be purchased, and from this rice which has been much lauded, I have taken 10 per cent of rice, which is marked No. 4. On our northern rivers the land is more compact and produces a more flinty grain, and the quality is better than our own, and is not so much injured by indifferent seed, and hence the planter does not suffer to the same extent. My deliberate conviction, based upon much attention to the subject, is, that if each of us would give the attention to the preparation of our seed rice which its importance demands, the character of our rice would be entirely altered and assume such a place in the market as we all desire. I will merely add that a raying screen is cheap and so easy of construction that any plantation carpenter can make one in a day.

BALKING OF HORSES.—A subscriber in Howard District, writes us thus:

"If you or any of your correspondents know an infallible rule for curing a false or balky horse, you will confer a favor on many by publishing the same in the Farmer."

We have always looked upon the habit of *balking* in the horse, as incurable. We have seen it lately stated, that the Mexicans overcome this propensity, by the following kindly treatment. The driver approaches the head of the horse, pats him gently on the neck and head, speaking soothingly to him all the while: after a few minutes, while the horse's sulky humor somewhat subsides, the driver commences to blow very gently upon the horse's nostrils, which he continues to do for a few minutes, then pats and soothes him again, and repeats the blowing upon the nostrils, when, it is said, the animal will be found to have been subdued. This is the plan, also, as stated by Catlin, that the Buffalo calves are tamed by the Indians; whether it will prove successful in conquering this radical fault in the horse, we know not; it may, however, be worth a trial.

So far as our experience goes, *kindness*, is one of the best correctives of bad habits, in either man or beast, and it may be, that the gentle treatment, indicated above, may be efficacious.

AN OLD BOOK ON FARMING.—We have received from Geo. H. Morgan, Esq. of St. Mary's Co., as a donation to the Library of the State Society, a copy of the "Kalendarium Rusticum; or Monthly Directions for the Husbandman," published in London in 1716, 134 years ago. We have hastily glanced over this work of antiquity, and were it not for the old English style in which it is written and printed, we might have supposed that it was a work of modern days—so closely do the views which it presents, resemble those most in vogue at the present day—showing that, until within a few years past, but little advance has been made in agricultural progress for the last century and a quarter. But who can estimate the results of that advance now making, at the end of the present century!

Report of Dr. James Higgins, STATE AGRICULTURAL CHEMIST.

[CONTINUED FROM PAGE 440 OF VOL. V.]

LIME—MODE OF APPLICATION.—This is a subject upon which there is much difference of opinion among practical men.

The greatest good is obtained from lime when thoroughly mixed and incorporated with the soil. This is proven by the fact, that when lime exists naturally in a soil, other things being equal, a larger crop is produced than when the same quantity is applied artificially. This superior produce is obviously due to the more intimate mixture in the former, than in the latter case. In the application of lime, then, the first consideration should be so to use it as to mix it intimately with the soil. This is sought to be done in three ways;—1st. By applying it to the surface, and suffering it to remain undisturbed for a year or two;—2nd. by applying it to the surface, ploughing it under immediately, and working the land in some crop;—3rd. by mixing it in compost beds, and applying it in the same manner. Each of these methods has its peculiar advantages, and is also liable to objections. The texture of the soil is to be taken into consideration. By the first method, the lime becomes very thoroughly mixed with the soil, particularly if it be a loose sandy soil, as the rain water washes down its particles, and fixes them between the grains of sand. But when lime, or any other manure, is purchased, an immediate return is desired, which cannot be had if this plan be followed. Many of our farmers, too, having but little ready money, cannot afford to spend it without getting a speedy remuneration for its use. By the second method, the lime is thrown to the bottom of the furrow, and cannot be afterwards well incorporated with the soil, which is a great objection, as the benefit from its use, to the fullest extent, is not speedily obtained. The third method has the advantage of diffusing the lime very equally over the surface, and insuring its mixture afterwards; but it involves great labor in hauling and applying it, and but a small quantity can be applied at a time in this manner. The best mode of combining the advantages of these several methods, is first to fallow up the ground, which leaves it uneven, with numerous fissures produced by the ploughing, apply the lime, then follow it with a heavy iron tooth harrow, and cultivate it in some crop that requires frequent working,—corn for example. In this manner we mix the lime well with the soil, receive its benefits immediately in a crop, which can be more completely realised, as the corn can be followed by wheat, with which clover may be sown. The chief indications are then fulfilled. 1st. The lime is more thoroughly mixed with the soil. 2nd. Return for its cost in a crop of corn. 3rd. Increased return by a crop of wheat immediately succeeding the corn, and then the benefit of a good crop of clover, so useful, not only as food for stock, but as an improvement to the crop which it precedes.

For the reasons above stated, this mode of applying lime is preferable to all others. By it we mix the lime thoroughly with the soil, and obtain immediate return for its cost, a consideration of the highest importance with farmers, who have not the ability to lay out of their money for several successive years, but need an immediate return. Again this mode gives not only the speediest reward, but gives a much greater profit than any other mode in

the same number of years, which is the ultimate end of the application of all manures.

It has been a much mooted question, whether lime should be applied in its *caustic* or *slaked* state. The only condition to decide this is the quantity of organic (vegetable,) matter in the soil. Where this is large, as in the upper districts of Caroline county, in the Black Gum swamp soils of Dorchester, Somerset, and Worcester, and, indeed, in all newly cleared or drained lands, caustic and even hydrate of lime (waterslaked,) should be preferred, it promotes, in a very strong degree, the decomposition of vegetable matter, which is of no use in a soil until it is decomposed.

Until it becomes so, all of its inorganic matter, its compounds of lime, potash, soda, and magnesia, are entirely useless to the crop; being, in reference to it, so much inert matter. Whatever can so act as to bring these inert materials into actual use must benefit the soil even independent of its own direct use.

All vegetable matter contains these constituents, which are essential to its very existence, and when set free, they serve as food for cultivated plants. This is the only material advantage that caustic lime has over that which is slaked, as it all becomes slakened after exposure to the atmosphere. Lime should always be applied to the soil in as dry a condition as possible, for when it is wet it becomes cemented into lumps which become very hard, and a long time elapses before they are broken down and mixed with the soil. While it remains in lumps it is of no use to the crops, and those who apply it in this condition not only lose actually the lime, but also its effects on their crops; each a matter of great consideration. Magnesian limes should not be spread on the land until the lime in them becomes slakened. If put on in the caustic state, water will cause the magnesia and lime to form a cement and small balls will be formed which will require a long time to fall to pieces. There is a custom prevalent in some sections of the State, of mixing caustic lime with stable and barn yard manure. This cannot be too strongly reprobated. If those who use it in this way were to try to injure their manure as much as possible, they could not adopt a better plan. Ammonia, one of the most valuable constituents of stable and barn yard manure, is expelled from the heap by caustic lime, and escapes into the air.

This plan should therefore *never* be followed. It is no proof in its favor, that the manure, after being treated in this manner, still does good; a part of its valuable constituents, fire will not destroy; but one of the things which gives it its peculiar distinctive value, is entirely dissipated when mixed with caustic lime, (oxide of calcium,) or water slaked lime, (hydrate of lime.) It is indeed one of the means by which chemists determine the quantity of ammonia in a compound, so thoroughly and entirely does it drive it all away.

Upon grass lands, when they fail to produce well, and that failing is owing to deficiency of lime in them, it may with great advantage be spread on the surface, and have a light harrow run over it.

This will not only insure to the crop the full benefit of the lime, but will materially improve the texture of soil by loosening the surface, which from the long absence of cultivation becomes *bound*, and frequently covered with moss, and unfitted to produce a good crop of hay. The full benefit of the lime can be obtained without the trouble and expense of breaking the land from its "setting" in

grass, and no intermission need be had in the crop. When it is intended to supply the deficiency of lime in a soil by the medium of marl, it should always be applied *as long a time as possible* before the culture of the soil. Atmospheric influences, the alternation of heat and cold, and of dryness and moisture, are all powerful agents to disintegrate the marl, reduce the shells to powder, and bring it into a condition most favourable to the crop, whose production it is intended to assist. Situated as the great mass of our farmers are, precise and exact rules cannot be followed. Many are obliged to yield to circumstances, but they should keep the above principles steadily in view, and conform to them as nearly as possible.

They are the result of much and careful observation; are substantiated by the highest authorities; and are derived from a knowledge of the qualities of the cause, by whose application the desired effect is sought to be produced; in other words: from a knowledge of the action of the agent, and the object upon which it acts.

From a knowledge of the properties of lime as carbonate, and of those agents to which it is subject, the reasons for the above rules will appear manifest. I need not here repeat what was said in relation to the different modes of applying lime, except in relation to its use as a top dressing for grass. Keeping in view the great principle of incorporating it thoroughly with the soil, we see how this is done by top dressing of grass land. Though lime be but sparingly soluble in pure water, yet we have seen that it is quite freely so in water charged with carbonic acid: when marl lies with the decayed leaves and stalks of grass on the surface of the meadow, this gas surcharges rain water, as soon as it falls, dissolves the lime, and carries it in a state of solution in the soil.

This is not the only way however in which it is mixed with the soil. A large quantity of lime, though not dissolved, is yet carried down the interstices of the soil mechanically, by the water which falls on it. In this way a large quantity of it will disappear from the surface, having become diffused through the soil.

The rationale of the application of marl to the surface is equally sustained, when we consider its physical condition in connection with its chemical qualities.

The lime which exists in marl is always in the state of carbonate, and hence subject to the same influences as common lime that has been burnt from shells or limestone, and become slakened.

There is however this difference, that the lime in marls is either in masses of comminuted shells, or in large fragments that have never been disintegrated. By the atmospheric exposure on the surface they are subject to the action of water charged with carbonic acid.

The shells by alternate freezing and thawing crumble into finer particles, become more easily acted on by water impregnated with carbonic acid as this change progresses, and become entirely blended with the soil, fulfilling, perfectly, all the indications which first directed their use.

MODES OF ACTION.—Sometimes it acts as direct food to the plant; sometimes by the decomposition of organic matter; and very frequently, by its power of setting free other valuable elements which may exist in soils, but not in a form capable of serving as food for plants.

Many theories have been published on the manner in which lime acts in producing fertility, and

much has been spoken and written as to the peculiar manner in which it manifests its utility. A report like the present, designed to be merely practical in its nature, affords no opportunity to discuss these questions.

Let it be sufficient to say, that it should *always* be applied to a soil when it is not already present in sufficient quantities, and never applied when it is. This short remark comprises all the rules for the necessity of its administration—further remarks would be unnecessary.

MAGNESIA.—Is the oxide or rust of metal called magnesium, and its necessity to fertile soils is supported by facts as well established, evidence as conclusive, and testimony as convincing, as those which show the use of lime, potash, or any other constituent.

Like lime, it loses its carbonic acid when exposed to a high degree of heat in a current of air, and becomes caustic or calcined magnesia. It remains in this condition much longer than lime, as it imbibes carbonic acid with much more difficulty from the atmosphere. It also unites to water, but with much less intensity than lime, producing but a very slight degree of heat, whilst the union is being accomplished. Magnesia, for agricultural purposes is obtained from a rock called dolomite, and is found associated with lime, both existing in the state of carbonate.

The proportion of lime and magnesia in this rock vary in the different localities, and even in the different parts of the same rock; and the ratio of their ingredients is very variable, "since isomorphous substances crystallize together in all proportions." We can only estimate the quantity of each, and the particular adaptation of a limestone to the soil by a quantitative chemical analysis.

The belief is very generally diffused, that magnesia, instead of being a necessary constituent of a fertile soil, and an essential part of the plants, injures the quality of the one, and proves detrimental to the growth of the other.

To correct this erroneous impression as far as I can, and show how far it is useful, and when it may be injurious, when it should be applied, and when withheld from the soil, I will briefly review the arguments against its use, and let the facts which I shall offer, urge its application.

Sprengle says, that soils containing much of the carbonate of magnesia are said to be highly absorbent of moisture, and to this cause is ascribed the coldness of such soils. This absorbent property of magnesia, so far from being an objection against, is a recommendation for its use, as we find many soils deficient in this property, being light, loose, and porous,—deficient in the two great *absorbers* of food from the atmosphere, clay and the per oxide of iron, and not having a sufficiency of fine sand to effect the vicarious action of these substances. Here, then, for its mechanical agency alone, magnesia is indicated, and if it had no other use, should be applied.

Chaptal says, that "magnesian soils are by no means fertile," and that whenever lime, containing magnesia, is used for agricultural purposes, it no longer produces the same effect."

Against this sweeping declaration of the poverty of magnesian soils, no better argument can be used than that of showing the composition of some fertile soils.

Johnston, J. F. W., Lectures on the application of Chemistry and Geology to Agriculture, p. 284,

"gives a soil which had been cropped for 100 years successively, without manure or naked fallow," containing 1.16 per cent of magnesia, equal to about 350 bushels of magnesia to the acre, to the depth of twelve inches; another containing .312 per cent of magnesia, equal to about 94 bushels, "a virgin soil celebrated for its fertility;" another containing a carbonate of magnesia, 10.36 per cent, equal to about 3,100 bushels of carbonate of magnesia, which had been "unmanured for twelve years, and during the last nine, had been cropped with beans, barley, potatoes, winter barley and red clover—clover, winter barley, wheat, oats, naked fallow."

Analyses of Sprengle, too, shows very fertile soils containing—

.6 of one per cent of carbonate magnesia.			
1.64	"	"	"
.52	"	"	"
2.22	"	"	"
.84	"	"	"
1.04	"	"	"
		of magnesia.	

The following analysis of my own, also show, that magnesian soils, so far from being barren and unproductive, are exceedingly fertile. No. 1. Soil from Kent county, producing 20 bushels of wheat, and 10 barrels of corn per acre, contains of magnesia .35 of one per cent, equal to 100 bushels. No. 2. Also from Kent county, producing 224 bushels of wheat, 8 barrels of corn, and fine crops of clover contains .27, equal to eighty bushels to the acre.

No. 3. A soil from Queen Ann's county, producing 30 or 35 bushels of wheat, 12 barrels of corn, and fine clover, contains of magnesia .4 per cent, equal to 120 bushels. No. 4. Soil from Queen Ann's county, producing 30 or 35 bushels of wheat, 12 or 15 barrels of corn, fine clover, contains of magnesia .38 per cent.

There is another soil from the same neighborhood, favorably situated, and in a fine state of cultivation, (Dr. W. H. DeC.) having very nearly the same constituents as the two last mentioned, which produces only 20 or 25 bushels of wheat, and contains only .01 per cent, equal to about 3 bushels of magnesia. These show the necessity of magnesia, as strongly as facts can show anything.

Again, in Talbot and Dorchester, we have fertile soils containing from 60 to 400 bushels to the acre; and in Caroline and Worcester we have soils deficient in magnesia, all things else being present, and yet not so productive as where magnesia exists. But the evidence does not stop here, the ashes of the grain of wheat contain from 12.98 to 16.26 per cent of magnesia, according to the analyses of Bichon, Thou, Boussingault, Willis and Fresenius: the inorganic part of the grain of barley contains of magnesia 10.5 per cent.

But why multiply proofs? The above are sufficient to show, that it is one of the necessary constituents of plants and of fertile soils, and if it does not exist in a soil, common sense tells us that it must be supplied, or that the soil cannot reach its maximum of productiveness. The application of caustic magnesia to a soil, may prove injurious from its caustic properties, since it does not readily imbibe carbonic acid from the atmosphere, and become mild, as lime does. From this quality, we should place it in as dense an atmosphere of carbonic acid as possible, by applying it to the surface and turning it under with some green crop, or by mixing it in compost heaps, before applying it, or by letting it remain on the surface for as long a

time as possible, before the land is cropped. On the Black Gum Swamp soils, and on those on the Beaver Dam in Queen Anne's, no injury need be feared from its use immediately before a crop.

On the soils not containing a large quantity of vegetable matter, from twenty to forty bushels of magnesia lime to the acre, is the best quantity. This should be applied every three or four years, until about two hundred bushels shall have been used. The larger the per centage of magnesia in the lime, the smaller the quantity to be used.

POTASH.—Is the oxide or rust of metal called Potassium. This substance is supplied to soils from ashes, the unleached containing very much the larger quantity, from stable manure, from scrapings from the woods, and more especially from the green sand or Jersey marl. The quantity in ashes, as they are usually sold for manure, is very variable. I have found them to vary from five tenths of one per cent, to four and one half per cent. The quantity of potash necessary to constitute a fertile soil, as I have elsewhere stated, is very small; for reasons given elsewhere, I have not been able to give any very definite information with regard to it. It will be in my power, in my next annual report, to speak more particularly of this substance as well as soda. With regard to both of these substances, I may here state, that upon land where the wheat crop is liable to rust, ashes, particularly the unleached, or common salt, which contains soda, will usually prevent its occurrence. Of common salt, from one to three bushels per acre, sown on the wheat is sufficient, and the proper time of doing this is the early part of April.

Chlorine exists in salt, and can only be economically supplied by applying salt.

The next class of manures are those which especially supply phosphoric acid or phosphates of soils.

Phosphoric acid exists in the soil in combination with iron, clay, lime or magnesia.

In the stalk of plants, in combination with lime and magnesia, it is always found in small, and in the grain or seed, always in large quantities. In animals it is found in the bones in large proportions. With bases, it forms a class of salts called phosphates. What is the exact quantity which should exist in a soil to give it the greatest degree of fertility has not been ascertained. Whenever the analysis of soils shows a less quantity than (.05) five one hundredths of one per cent of iron and alumina as phosphates, (for in this, for valid reasons, I have always estimated it), phosphates may be advantageously supplied. The only indication for their use is their absence or deficiency.

SOURCES OF PHOSPHORIC ACID.—The chief sources of the supply of phosphoric acid are from bones and guano. Ashes, both leached and unleached, also contain them in large quantities, and to this much of their beneficial action may be frequently ascribed.

BONES.

Bone dust contains about fifty per cent of phosphate of lime and magnesia. I mean, now, bone dust, such as is ground from bones, as they are used for manure without any special washing.

Besides this, they, by the decomposition of animal matter in them, afford ammonia. In this manner, they have a two fold action on crops;—1st. By supplying them with ammonia;—2nd. by supplying phosphoric acid. They should be so prepared as to preserve both of these valuable constituents.

MODE OF PREPARATION OF BONES.—There have

been many different ways of preparing bones. The most common is that of ground or crushed bones, in which they are broken to a greater or less degree of fineness, and then applied to the soil. Another mode recommended by Mr. Pusey, of England, is to first grind them, then moisten with water, cover them with a stratum of earth, and suffer them thus to remain for a week or ten days. In this way the bones become converted into a soft pasty mass, which is to be thoroughly mixed with the earth which covers them and applied to the land. The outside of the heap should have a thick covering of gypsum, which will retain all of the ammonia generated during the decomposition of the animal matter in the bones.

Another mode has lately been advised and practised with success, viz: to dissolve the bones in sulphuric acid, diluted with water. In this way, the same quantity of bones will produce a much greater effect than when ground to the finest powder.

To effect their solution, the bones should be first ground or broken with *rammers*, put into a wooden vessel, (a cider or hog trough will answer very well;) mixed with half their weight of water, then suffered to remain for a week or ten days, or until the fragments of bones are no longer visible—the whole then, should be intimately mixed with ashes, saw dust, scraping from the woods—or *what is much better, corn or wheat bran*. With this application, not only are the phosphates supplied to a soil, but also gypsum, the latter being formed by the action of the oil of vitriol on the bones.

The use of the sulphuric acid requires some caution, as it will burn the skin and injure the clothes if suffered to come in contact with them.

The great superiority of bones prepared in this way, consists in their more complete division; they are reduced to an impalpable powder, which can be more evenly and equally distributed over the soil, more easily dissolved by the rain, and more readily taken up by the crop. The same amount expended in this way will produce a much greater return than when laid out for bone dust.

There is still another, and as I believe, a better mode of using bones, because cheaper and equally productive, viz: the applying of them in the *liquid* form. To do this the bones are first dissolved in oil of vitriol, and then diluted with a large quantity of water, and applied at the time of sowing wheat by a machine for that purpose.

The machines used in England for this purpose are very expensive, costing from two to five hundred dollars.

It may be applied by a very cheap and simple contrivance, as follows:

Take a hoghead of convenient size made of thick staves, and near the bottom insert a leaden pipe, connecting it with another hoghead, which may be of half the capacity of the first. The leaden pipe must have a stop-cock, by which the flow of water

may be regulated from the larger into the smaller hoghead, so that in the smaller hoghead a regular head of water is kept up. This smaller hoghead is to have a leaden pipe also, with a stop-cock fixed into it near the bottom, which should be joined at right angles to a hollow cylinder of wood, perforated with numerous small gimblet holes.

This whole apparatus can be placed in a common horse cart, when the larger hoghead is to be filled with the dissolved bones. When in the field the stop-cock in the leaden pipe, leading from the larger to the smaller hoghead, is to be turned so as to keep up a regular head of water in the latter. As soon as the team starts, the stop-cock in the pipe, leading from the second hoghead to the perforated cylinder, is to be turned, and by means of the gimblet holes in the cylinder, the dissolved bones will be very equally distributed on the land. The perforated wooden cylinder should have a length equal to that of the axletree of the cart used. This simple contrivance will distribute the dissolved bones as effectually as the most expensive English machines, and the whole cost of it will not exceed twenty dollars. This application should follow immediately the sowing of the wheat. Bones used in this way will give the wheat a strong, quick growth, and thus, in a great measure, prevent injury from the fly. I am at present making some experiments to drive away or destroy the fly, and with strong prospects of success.

To apply bones in this manner is a great saving of them, and a much less quantity answers than when they are ground, dissolved in oil of vitriol in the way first mentioned, or decomposed by a covering of earth. They are scarce and expensive, and any mode therefore which can substitute for quantity, skill, or even expense in their preparation, should meet with the most favourable consideration. I am not aware that they have been applied in this way in this country. In England the following experiments show the relative value of bones in the liquid form, when compared with other modes of application.

No. 1.

DUKE OF RICHMOND'S EXPERIMENT.

Lot 1.—Manured with 14 yards of farm yard dung, and 8 bushels of bone dust.

2.—Manured with 315 lbs. of guano.

3.—Manured with 16 bushels of bone-dust.

4.—Manured with 2 bushels of bone dust dissolved in 83 lbs. of sulphuric acid, previously diluted with 12 gallons of water. 388 gallons of water were added to it. The mixture was then applied to the drills in a liquid state, by means of a water-cart.

5.—Manured with 8 bushels of bone dust mixed with 83 pounds of sulphuric acid, previously diluted with 12 gallons of water. This mixture, nearly in a dry state, was then sown by hand along the drills.

Lots	Cost of Manures.			Weight of Tur's.	Value of Turnips.			Produce of Barley.	Weight per Bushel.	Value of Barley.			Total Value of Produce.	Value, after deducting cost of Manure.		
	£.	s.	d.		£.	s.	d.			£.	s.	d.		£.	s.	d.
1	3	0	0	12 0	3	0	0	4 1 3	56	5	18	1 1/2	8	5	18	1 1/2
2	1	17	4	11 4	2	16	0	3 5 1 1/2	55	4	19	1 1/2	7	15	1 1/2	5 17 9 1/2
3	1	16	0	11 0	2	15	0	3 7 1 1/2	55	5	6	11	8	0	11	6 4 11
4	0	11	6	12 4	3	1	0	3 4 3	56	5	0	7 1/2	8	1	7 1/2	7 10 1 1/2
5	1	5	0	11 0	2	15	0	3 6 2	56	5	6	9	8	1	9	6 16 9

NO. 1.—(Continued.)
MR. WILLIAMS' EXPERIMENT.

	Manures and Quantity.	Application.	Produce per Acre.			Cost per Scotch Acre.		
			Tons.	Cwts.	Lbs.	£.	s.	d.
1842	Bones . . . 20 bushels	Drilled . . .	12	4	3	3	3	0
	Bones . . . 4 bushels Sulphuric acid 16 lbs. Water . . . 224 lbs.	In 6,400 lbs. or 640 gallons } of water in furrow, }	17	4	5	1	8	6
	Bones . . . 20 bushels Sulphuric acid 76 lbs. Water . . . 126 lbs.		13	0	52	3	13	6

PECULIARITIES:—The difference between the applications and the bone dust, applied in the usual way, "was most marked;" the sulphuric solution brought the turnips to the hoe ten days earlier than the bones alone, and four days before the bones *sprinkled with acid*.

NO. 1.—(Continued.)
MR. GEDDES' EXPERIMENT.

	Manures and Quantity.	Application.	Produce per Acre.			Cost per Scotch Acre.		
			Tons.	Cwts.	Lbs.	£.	s.	d.
1842	Manure, - 15 loads, Bones, - 15 bushels, Bone dust, - 1 bushel, Acid, - 67½ pounds, Water, - 201½ " Bones, - 12 bushels,	In 6,600 lbs. or 660 gallons of } water, }	13	19	21	3	12	6
			13	10	21	0	17	6
			11	9	21	1	18	0

NO. 2.
DUKE OF RICHMOND'S EXPERIMENT.

	Manures and Quantity.	Application.	Produce per Acre.			Cost per Acre.		
			Tons.	Cwts.	Lbs.	£.	s.	d.
1843	Bones, - 16 bushels, Bones, - 2 bushels, Sulphuric Acid 83 pounds, Bones, - 8 bushels, Sulphuric Acid 83 pounds,	With 400 gallons of water. } Acid spread over bones and } sown, }	11	0	0	1	16	0
			12	4	0	0	11	6
			11	0	0	1	5	0

NO. 2.—(Continued.)
MR. HANNAN'S EXPERIMENT.

	Manures and Quantity.	Application.	Produce per Acre.			Cost per Acre.		
			Tons.	Cwts.	Lbs.	£.	s.	d.
1843	Bone Dust, 16 bushels,	Drilled with Seed,	15	3	4	1	13	0
	Bone Dust, 8 bushels, Sulphuric acid 168 pounds, Water, 604 "	Drilled with water equal } to 50 times the weight of } the acid applied in the } furrow-ridge plough up, } and then seed drilled, }	17	7	1	1	15	0
	Bone Dust, 8 bushels, Sulphuric acid 168 pounds, Water, 604 "		17	7	1	1	19	6
	Bone Dust, burnt to half its } original weight, 8 bushels, } Sulphuric acid 84 pounds, } Water, 252 "	Diluted and applied as above, }	13	7	6	1	6	0
	No Manure, - - -		7	0	6			

Soil very thin limestone, and poor in condition.

If no experiments had been ever made, I can readily conceive how, not only bones, but any other manure, applied in this manner, will produce a much greater effect than when applied even in the finest powder. I will not recapitulate the reasons for this opinion here. Under the general head of manures they may be seen—common sense and experience confirm them.

GUANO.

GUANO is the next source of supply of phosphates. This substance has been, for the last few years, extensively used as a manure. Besides the phosphates which it contains, a large quantity of ammonia is generated during the decomposition of its azotised matter.

Guano, as is well known, is the dung or fecal matter of various tribes of sea birds deposited on the coast of Africa, South America, and on the Florida coast of the United States. The varieties most usually sold are the Chilian, Peruvian, Patagonian, and the African or Ichaboe Guano. Of these, the first two command much the highest price in the market, the African or Ichaboe being much less valued, and selling for less price. The difference between the Chilian and Peruvian, and the two latter, depend on the difference of the climate in which they are found. The atmosphere in Peru and Chili is very dry, scarcely any rain falling, and hence the guano, after its deposition, suffers but little change, no water being present to aid the heat in its decomposition; both heat and water being essential to that process in organic substances.

On the coast of Africa and Patagonia, much rain falls, which not only dissolves some of the phosphates in guano, but readily washes out the ammonia as it is formed. These latter varieties, therefore, are never so rich in ammonia as the former, but they frequently contain a larger quantity of phosphates, inasmuch as the ammonia being formed and driven off, the proportion of phosphates in any given quantity will be comparatively greater. The indications for the use of guano, are the absence or deficiency of phosphates in a soil, and the inability of soils to supply themselves with ammonia, for want of power of absorption. The constituents for, and the conditions necessary to this, may be seen under the head of Alumina, Iron, and Sand, in the chapter on the constituents of soils and their properties.

I will, however, state here, that upon open, loose, light porous soils, that species of guano, containing the largest quantity of ammonia, should be used; but on clayey land, or white oak soils, that kind containing the largest quantity of phosphates is preferable, because these soils can supply themselves with ammonia from the atmosphere. It is a matter, then, of the first importance for the purchaser to be able to know the constituents of guano. At present he cannot know them, unless he employs some chemist, which he had much better do, than to buy and apply guano in the dark. The different specimens of guano differ very much, and the purchaser should know, before buying, the value of each lot that he purchases.

There is much difference in opinion, as to the mode in which it should be applied, some advocating its application to the surface as top dressing, others ploughing it under. Where the soil is porous, the former, I believe, is preferable; in stiff soils the latter is the better mode. In either case gypsum should be applied with it, in the proportion of about one-eighth by weight. The best quantity

per acre, depends on the quantity of phosphates and ammonia in the specimen to be applied. A quantity of guano, capable of yielding phosphates, equal to about seventy-five pounds of bone dust, is the best, as far as my knowledge enables me to say; the facts in my possession in relation to this are very few, though I believe, more numerous than have been obtained by any one else. Indeed though there has been so much written and published, as to the action of guano, no information has been elicited of general utility, because neither the composition of the guano, nor of the soil, has been given, and yet they are the two chief items which can afford us data, whereby to establish rules for the quantity to be used, or, indeed, for its use at all. I know of cases where it has acted well, that is, has more than paid for its cost, where, however, a much less sum expended in other manures, has paid more than twice as well.

Phosphates exist in night soil, in poudrette, in ashes, in stable and barn yard manure, in some marls, in oyster and shell lime, and also in stone lime, but in the last, not in sufficient quantity to merit especial attention in reference to agriculture.

The next subjects claiming attention, are those which furnish

SULPHUR OR SULPHURIC ACID

to the soil. They are called sulphates, because formed of sulphuric acid, (oil of vitriol,) in combination with some base. The sulphate, almost universally used, is gypsum, or plaster of paris, this is a sulphate of lime with two equivalents of water.

This substance has been most extravagantly lauded and condemned by different persons, as it chanced to act well or badly, when used by them.

The indication for its use, is its absence or deficiency in a soil. When all of the other necessary constituents of a soil are present, this being absent, its use in very small quantities, produces an almost magical effect, making all the difference between a soil almost absolutely barren, and one very fertile. Even though it be absent or deficient, by itself it will not do any good, unless all of the other necessary constituents of a soil be also present, so that when gypsum does not act well on land, it may be for two reasons; the first, because of its presence already in the soil,—or secondly, because of the absence or deficiency of some other necessary constituent—the analysis of the soil, or a series of experiments, being alone capable of deciding, to which of these causes its non-action shall be attributed.

The very great difference in the gypsum which is sold in market, I shall advert to particularly when recommending some action in regard to its inspection. It is best applied by being sown broadcast on the growing crop, on clover early in the Spring, and on indian corn just before it begins to shoot.

The proper quantity is from one-half to one bushel per acre. An advantage is also derived from rolling the corn in it before planting. To compost heaps, to barn yard and to stable manure, it should be applied every few days in quantities depending on the number of stock, one gallon at a time, being enough for the largest yards or stables in the country.

This should be done whether gypsum is applicable to the soil upon which the manure is to be used or not, as it preserves one of the valuable constituents of the manure which would be otherwise lost. *Sulphate of Soda*, which is but common glauber salts, is another form in which the sulphuric acid, or one of the sulphates can be applied. They are

very cheap, being worth about three-fourths of a cent per pound, and when the soil is deficient in soda, should be preferred to gypsum, as by it both sulphuric acid and soda will be supplied at the same time.

Besides furnishing the elements to crops, which enter into its composition, gypsum is decomposed by the ammonia always present in the atmosphere, which, by uniting itself to the sulphuric acid of the gypsum, loses its volatility, that is, its tendency to escape into the air.

This mode of the action of gypsum has been denied by some very distinguished writers, who allege against this theory, that the increase of the substances in the crops which it absorbs from the air, is far beyond what the quantity applied is capable of retaining. Those who take this ground forget, that when sulphate of lime is decomposed by carbonate of ammonia, the growing crop takes up the ammonia without using the sulphuric acid, which is thus left to absorb and yield to the crop successive quantities of ammonia, as long as it remains in the soil. All chemists are familiar with similar action in the manufacture of certain chemical compounds.

Sulphate of magnesia, common Epsom salts, is another source from which sulphuric acid may be applied to soils deficient in its two constituents, viz: sulphuric acid and magnesia. Though much dearer than the two above mentioned, it will be found superior to them on soils deficient in both sulphuric acid and magnesia. I have now some experiments to be performed in relation to the use of its substance, which, when complete, will be laid before the public.

Chlorine, which, in combination with bases, forms in what are called the language of chemistry chlorides, is another of the necessary constituents of soils, and consequently a manure. Common salt is the form in which it is most commonly supplied. The indication for its use, is its presence or absence in the soil, or the position of land in reference to salt water, as the vapor from it contains an appreciable amount of chlorine, which, by winds and storms are carried to the neighboring land.

These comprise all the necessary constituents of plants, all the necessary constituents of soils. The particular combination of each which will give the greatest yield, has not yet been determined. This can only be done by many careful analyses of fertile soils, in order to see what quantities are present in them, and by the analyses of soils which are unproductive, and then to determine, by the application of the necessary manure, the smallest quantity which will produce the greatest benefit. The experiments hitherto made, determine nothing but the mere fact, that some particular manure has acted well on some particular soil. As long as we remain in ignorance of the composition of the soil, so long we can learn almost nothing. I deeply regret too, that men, from whose reputation and knowledge better things might have been expected, have sanctioned the empirical course of endeavoring to obtain a knowledge of the best manure by its mere application to a soil, without any reference to the composition of the soil experimented upon.

The experiments made with so much care, and reported with so much commendable exactness in the journal of the Royal Agricultural Society of England, are incomplete; and those recommended by Professor Johnston, as well as those reported by him, are valueless, except to the particular individuals who made them. All others would have

to go over the same or other experiments, before they could tell whether the manures used successfully would be equally efficacious in their hands, for if they have failed, being ignorant of the causes of failure, no plan would be suggested to ensure success on a second trial. There would be a constant groping in the dark, because the light afforded by the analysis of the soil was neither furnished nor recommended.

It may to some seem presumptuous, that I thus condemn the course followed by men of high reputation and acknowledged ability; but neither of these is a safeguard from error, and neither "the shadow of a great name," nor any authority, however imposing, should be blindly followed. The science of agriculture, like all other sciences, has fixed laws; many of these laws are hidden at present from our view, and the veil which covers them will never be lifted, unless they be studied in a rational and philosophical manner. Each known fact in agriculture, to be useful, must have revealed with it all of the causes which led to its production. A successful or unsuccessful application of manure is a fact of no value, unless the composition of the soil upon which it was used be determined. Then all of the causes influencing its action will be manifest, and each experiment will lead us on to a perfect system; every trial of a manure will teach us how it should be used, and when rejected with profit.

GUANO HOW APPLIED TO WHEAT—VA. LANDS.—A correspondent at Warsaw, Va., under date of 20th May, writes as follows:

"My Wheat looks finely, especially where I applied guano last fall. I put it in with the seed furrow about 3 inches deep, and also with double plough 6 inches deep, harrowing in the wheat frequently side by side. At this time I can see no difference in the wheat crop. I use a large wooden toothed harrow extending over the bed of ten feet, and an even soil, free from stone; they do admirable work and drill the wheat as if put in with the drill.

Mr. Solon Robinson paid me a visit some ten days ago and seemed delighted with our county as to its soil, climate, &c., and expressed the opinion, that it offered the greatest inducements for farmers at the North to settle here. I believe a clear gain or profit of 10 per cent would certainly be realised on investment on one of my farms, consisting of 950 acres of bottom land, part in wood on which I worked 22 hands and six or seven mules; the crops sold in 1849 realized a profit of 15½ per cent. In this account annually kept, (for I keep an account of debit and credit with each farm, so as to show every year the net proceeds) I have not credited the provisions to the children on the farm, nor the pork, mutton and fodder used at my residence. This farm has had no aid from marl and from lime, only so far as it has been used in composts, which I form annually of marsh mud, farm yard manure and mild lime, in alternate strata, putting the lime on the mud. This acts finely on all soils and on all crops. I intend using guano on all wheat."

We have received from D. H. Hattan, Esq. of Nansemond, Va. a small parcel of each of the following varieties of the Pea, viz: the chickasaw, the red or Ripper, and the black, or Tory—we have still left some of the Shinney,—all of which we will distribute among our friends and patrons.—A few sacks of the Cow Pea can also be had.

BREEDS OF CATTLE—KEEPING, &c.

A subscriber in Richmond, Virginia, inquires as to the best breed of cattle, and in reply, we would remark, that that will depend upon several circumstances—locality, character of pasture for summer and autumn feeding, supply of long as well as succulent provender through the winter, the purpose for which such stock may be wanted, and many other considerations entitled to weight.

Where the pastures are rich and abundant, and the cattle may be wanted for the dairy and for beef, the improved short-horned Durhams, possibly combine the two qualities as fully as any other breed.

The cows of this breed, though far from being invariably deep milkers, number among them as many of such character as almost any other breed—their milk, though not the most rich of all others, is sufficiently so to render it probably productive in butter. Of the quality of butter, it may, as a general rule, be assumed, that that is dependent, very materially, upon the character of the pastures and feed; if these be rich and abundant, so also will be the secretions of cream; though, like all other general rules there are exceptions to this: animals of this breed are remarkable for their docility and gentleness of disposition, take on fat easily, and come early, perhaps earlier than any other breed, to the shambles, the heaves being as well prepared in 4 years, for such purposes, as others are at six, and, when well cared for, weighing more.

Next to these in the combination of the qualities of beef and milk, stands the *Herefords*. For this breed, many breeders of excellent judgment claim a superiority in both respects, and very many more, as regards the quality of their beef. There are doubtless many deep milkers among them; but, from all the information we can gather, from reading and from oral communications, we do not think it is a characteristic of the breed,—in saying this, we do not wish it to be inferred, that we believe them to be deficient in this particular; on the contrary, we hold them to be fair milkers, both as regards quantity and quality. They grow to large size, the males are ready for slaughter comparatively early, and the beef of very superior quality; the fat and lean well distributed, and offal proportionably small. As oxen, they are powerful, active, intelligent, and capable of enduring long continued labor.

For dairy purposes, solely, the *Ayrshires* may be said to be the best adapted to the generality of locations; they are hardy, thrifty feeders, good milkers, and, as a whole, what may be considered rich milk. The heaves though not as large as the Durham, or Herefords, are of good size, fatten kindly, and afford good beef.

The *Devonshires*, though not very deep milkers, are good milkers—many of them giving their 3 gallons and more a day, and what it may lack in quantity, its quality more than makes up for; for the Devon cow, in point of the richness of her milk, stands deservedly next to the Alderney. In point of size, the Devon cow is rather small; but then she is so beautiful, so kind a feeder, so hardy, and does so much credit to her keeper. The males of this breed, though small in stature, compared with some other breeds, make, so far as their size will let them, the best of oxen—they are obedient, faithful, true, and walk almost with the speed and grace of a full-blooded racer. As beef cattle, they hold a high position, fattening readily, and yielding fine juicy meat, most beautifully marbled, with the fat and lean placed where it ought to be—the offal small.

The *Alderney* cow yields the richest milk of all others,—and for a family cow, may be said to be the best; but then her tiny proportions would disqualify her for the purposes of slaughter, if the difficulty of fattening did not add to this objection.

The Old *Yorkshire* cows, were, and we suppose now are, the greatest milkers, but the quality of the milk is among the poorest.

With regard to the question of the "treatment" of cattle, as propounded by our correspondent, we would observe, that it should be kind—they should have good pastures through spring, summer, and fall, and where these are not attainable, good hay, and succulent food should be provided for them. To expect a poorly fed cow, to give plentiful supplies of rich milk, is to expect that which will never be realized. It is useless to go to the expense of buying improved breeds of cattle, unless one provides them with good food, plenty of it, the year round, and warm dry lodging in winter and during the early part of spring. Scanty fare, exposure to the elements in winter, and want of attention at other times, will cause the best breed to deteriorate.

If proper regard be paid to the treatment of such stock, their improvement may be relied upon. Young growing cattle should be sheltered in winter, be so fed as to keep them always on the advance—they should receive in addition to other long provender, clover hay, that being especially rich in those elements which enter into the formation of the bones, and being sufficient in those which yield nutrition. To keep up the tone of the system, they should receive an ounce, twice a week of salt, ashes, charcoal and lime, and their food should be alternated; barley, rye, oats, buckwheat, chopt, made into mashes with cut hay or straw, and roots, should be frequently given to them.

The milch cow should in winter and early spring, thrice a day receive seven pounds of hay, in addition to which night and morning, she should be treated to mashes of roots, of sorts, in which cut hay, straw, and meal, chopt grain, bran, or crushed corn and cob meal were mixed. We do not hold with stuffing, but we are the advocate of generous feeding.

With regard to the cheapest mode of improving native stock, we think that a cross upon a good native cow, by a *Durham* bull, would make a most excellent dairy stock. An *Ayrshire*, *Durham*, *Devon*, or *Hereford* bull, if judiciously selected, would, either, if put to a good native cow, effect a desirable improvement in the issue. Some of the best milkers we have ever seen, were half *Durham* and half native cows. The best butter cow we ever saw, was *Flora*, raised by the late *Charles A. Barnitz*, Esquire, of York, Pa. She, when fresh, gave milk which made 20lbs. of butter a week for several weeks in succession. She was $\frac{3}{4}$ *Durham*, $\frac{1}{4}$ *Devon*, and a most splendid animal at that.

To prevent the murrain, so destructive to cattle, brought from the North to the South, care should be taken, until they become acclimated, to give them a mixture of lime, salt, pulverized charcoal, and ashes, in equal portions, three or four times a week, say one or two ounces at a time—and not to permit them to be in pasture, where that is low and marshy, of nights, during the period when autumnal diseases prevail; it is safer to keep them in stables during that season at night, where they should receive liberal allowances of good hay, or fodder, and be fed with a grain mash, before being turned out in the morning. Constant supplies of wholesome water, is absolutely necessary to the health of cattle.

TO POSTMASTERS.—Notice.—The "American Farmer" is chargeable with newspaper postage only, agreeably to the decision of the postmaster general.

GUANO.—As a great deal of interest is felt, at this time, by farmers and planters, relative to the probable supply and price of this article, for their fall use, we deem it our duty to endeavor to keep them advised upon the subject, as far as our means of information will permit. In our last, we mentioned that five vessels were expected from the Coast of Peru before the 1st of Oct.—three of these have since arrived, viz: 1st. The J. G. Coster, with 500 tons, one-half of which was landed at N. York, and the other half was received at this port. 2d. The Kirkland, at this port, with 400 tons, 200 of which were landed here, and 200 tons sent to Washington, D. C. 3d. The Jane Parker, arrived at this port, but her whole cargo was sent to Alexandria. The 4th, with 300 tons, will arrive at this port about the 1st Sept., and the 5th, the Persian, is expected early in this month (Aug.) with 700 tons, 100 of which will be landed here, 150 at Petersburg, and the balance of the cargo at Richmond, Va. These, we are induced to believe, are the only vessels which will be likely to reach the U. States before the 1st of Oct., without an extraordinary good voyage is made. Price of Peruvian, \$47 a 48 per short ton.

Mr. J. H. Keene, of Balt. Co. has left a sample of the Ruffin wheat at our office.—It is of very fair quality considering the effects of the rust upon the wheat generally.—Mr. K. obtained some of the seed sent to this market last year and sold by Messrs. McConkey & Co. of which that is the product. It is believed to be early and prolific.

In reply to an enquiry, Mr. Coad informs us that he will have no seed wheat to dispose of this season, of the variety noticed in our last.

DRILLING IN WHEAT.

To the Editor of the American Farmer:

Dear Sir—As the time will soon arrive for farmers to decide on the mode of seeding their fall Grain, and, if to be drilled, to supply themselves with a good drill, I hasten to give the notice I promised you on the experiment I made last fall, with "Pierson's Drill," which I obtained of Ezra Whitman, Jr., and as your columns may be crowded, I will be very brief at present, and give you a more extended notice after I have finished threshing my grain.

I seeded 55 acres in Wheat, in St. Mary's Co., Md., with the Drill, under the direction of a good practical farmer, from the 15th of Sept. to the last of Oct., (the early seeding was best,) the most of which was seeded on wheat stubble, fallowed and ploughed with a one horse plough the same way; some drilled across the ploughing and some lengthwise. It was not found necessary to harrow before drilling.

Three acres were not fallowed until late in September, when a growth of weeds was turned in which was three feet high, and drilled after a shallow ploughing. The rest was drill'd-corn land; the corn was cut off, and the land ploughed with a one-horse plough, and the Wheat drilled without any further preparation. The Drill worked delightful on all, except the three acres referred to, and on that the Wheat was well drilled, but with some extra labor in keeping the tines clean. We drilled 1½ bushels Mediterranean Wheat per acre, and it was

sufficiently thick, and 1½ bushels of Eturian Wheat, which was too thin; both came up regular and stood the winter better than ploughed-in Wheat. The two lots of Mediterranean are now thrashed—one of 26 acres yielded over 18 bushels per acre (the best sample I have seen this year)—the other of 9 acres yielded nearly 21 bushels per acre, which was a good yield, considering it was in a neighborhood where the rust has very seriously injured the Wheat crop, and I think the yield must have been increased from 2 to 4 bushels per acre by the use of the Drill, with a saving of one-third of a bushel of seed per acre. I am so well satisfied that there is a gain of the cost of the Drill (\$100) for every 100 acres of Wheat drilled on good, fair land, that I would not be deprived of the use of one, if it cost me that amount, but from my present knowledge, I would think that the use of a Drill will not cost (interest included) over twenty cents per acre.

Yours, with much respect, R. N. MANSUR.
Baltimore, July 24, 1850.

METEOROLOGICAL TABLE.

From the 20th of June, to the 21st of July.

Kept at Schellman Hall, near Sykesville, Carroll County, Md.

Taken at 6 o'clock, a. m., 3 o'clock, noon, and at 6 o'clock.

	Wind.	Temperature.	Remarks.
21	NE	70 86 75	Clear, Shower ½ in. gust 1 in
22	E	70 80 75	Cloudy clear,
23	SE	70 82 78	Fog, cloudy, clear
24	E	88 81 74	Clear
25	NE	84 82 75	Clear
26	E	86 80 75	Clear
27	SE	85 78 75	Rain, cloudy, gust, great deal
28	SE	89 85 80	Showery (Elec'S-S in
29	SE	75 83 79	Cloudy
30	S	84 87 78	Clear, fine breeze
1	W	80 90 80	Clear
2	SE	87 76 73	Clear, heavy gust, 3-8 in
3	S	87 86 78	Fog, clear, cloudy, clear
4	SW	73 90 83	Clear
5	SW	73 93 89	Clear, a very strong breeze
6	SW	78 90 85	Clear do
7	SE	86 85 75	Clear
8	E	85 84 74	Clear
9	SE	83 80 73	Cloudy
10	SE	70 79 74	Cloudy
11	SE	85 78 75	Clear
12	SE	88 76 75	Clear
13	E	88 80 75	Clear
14	SW	87 85 82	Clear, fine breeze
15	S	75 75 73	Rain, 3 in.
16	SE	73 85 80	Fog, clear
17	SW	73 83 73	Cloudy, showery
18	NE	73 69 67	Fog, rain
19	W	55 73 70	Violent storm of wind and rain
20	NE	66 81 71	Clear [3-8 in

REVIEW OF THE TOBACCO & GRAIN MARKETS.

Reported for the American Farmer by J. W. & E. Reynolds.

In consequence of the planters being busily engaged in planting their Tobacco and harvesting Grain, the receipts of Tobacco this month have been very small, and consequently transactions in this article have been very limited. Prices, however, range about the same as they did in June.

Judging from the lateness of the planting of the growing crops, we must have a short and dark one for the market next year, which may have the effect to cause the good and fine descriptions to advance in price. We quote sales of good and fine Md. at \$6 to \$10; Middling to Good Crop and Second \$4½ to \$5½; Common Crop and Second \$3 to \$4.

Grain.—Since our last report, Corn has been in active demand and prices have advanced several cents per bushel, and we now quote sales of white at 64 to 66c; yellow 66 to 67.

Wheat.—From information received from different

sections of the country, we are convinced this crop will fall short fully one-third of the quantity anticipated by farmers, in consequence of the "rust," and the quality of the crop is generally inferior to what it usually is. But little has yet arrived here of the new crop, and the prices for it have ranged from 75c for damaged, to \$1.15 to \$1.32 for good sound reds and white. We think the early market will be best.

Oats.—This crop is remarkably indifferent, great many fields not worth being cut, and others not yielding a return of seed, and consequently prices have ruled high. We quote sales at 42 to 46c, and supply scarce.

Cattle.—780 head offered on Monday, 585 sold, 75 left over, and 120 driven to Philadelphia—prices ranged from \$2.50 to \$3.25 on the hoof, equal to \$5 a 6.25 net, and averaging \$9 gross. Hogs—\$5.25 a 5.50.—Howard street Flour \$5.25; City Mills from old wheat, \$5.37; from new, \$5.50.—Coffee, Rio, 9 5-8 a 10c; Laguayra, 9½.—Cotton dull—Upland, 13½c. Feathers, 30 a 35c.—Flaxseed, 133 to 135c per bushel.—Molasses, Cuba, 18 a 24; N. O. 25 a 28; Porto Rico, 23 a 28c.—Rice, \$3.50 a 3.75 per 100 lbs.—Sugar, Cuba, \$5.50; N. O. \$5.50 a 6.25; P. Rico, \$5.50 a 6.50.—Whiskey, hds., 25; bbls., 25½ a 26c.

CHEMICAL SALTS.

KETTLEWELL & DAVIDSON'S Agricultural Depot, Federal Hill.

Office at the Wholesale Drug Store of Ober & McConkey, corner of Lombard and Hanover sts.

THE subscribers, as the season of seeding time is rapidly approaching, beg leave to inform the agricultural interests of this State and elsewhere, that from the success with which their enterprise has been favored, they have gone on to increase their business in a proportionate degree. They have had the most satisfactory testimony, of the invaluable aid which their *Renovator or Chemical Salts* has rendered, to various descriptions of Soil. It is, however, but just to say, and they wish to be the first to avow it, that upon some soils, like Guano and other descriptions of manure, the evidence of improvement was not so marked and decided, upon the first crop, as would have been desirable. These instances of failure however, are exceedingly rare, and the elements of which the Salts are composed, must develop themselves most triumphantly, in a second crop, which will still be improved upon in the third, fourth, and fifth, if there is any dependence to be placed upon Chemical science, for the improvement of land. These Salts supply to the soil the deficiency, from whatever cause it may exist, and must give permanent and lasting improvement to the land. The subscribers avail themselves of this opportunity, to express their acknowledgements, for the assistance they have received, from the farming interest generally, both of Maryland and Virginia, not only in a liberal patronage, but likewise in invaluable suggestions and advice, as to the best mode of using their salts upon the various grains, plants, &c. Their experiment so far, has only been of one year's experience; and in the next September number of the *American Farmer*, they will present certificates, from the most successful and accomplished agriculturists of this, and other states, to show beyond the shadow of a doubt, that they have rendered a great public service to those who wish to give permanent improvement to their soils. These new certificates

which they shall submit to the public, will also embrace those where their Salts have not acted so favorably. They are not insensible to the magnitude of their enterprise, and in soliciting a fair trial from a jury of farmers, they shall frankly submit both sides of the question; no enterprise like their's can be successful, without this open, honest, straightforward way of dealing.

They also will keep constantly on hand, a full supply of *Ground Plaster*, branded with their own name, and of such quality, that none can be better, and therefore the planter will get what he pays for.

They also continue to manufacture pure *Biphosphates*, dissolving the Bone dust with the oil of Vitriol, and which has been said by the first chemists of the country, that one bushel is equal to four of the common Bone dust.

They also keep constantly on hand, a full supply of Chemical residuums, at low prices.

Also a full stock of *Ground Plaster* and *Agricultural Potash* combined, in the proper proportions, for Tobacco land.

Among the very gratifying experiments which have been made, the combination of a hundred pounds of Guano, with two hundred pounds of their Salts, has been almost universally and extraordinarily successful, the first being more prompt and active, but far less durable; an important consideration, which the Salts fully and amply supplies. Respectfully referring to the September number, of the *American Farmer* for certificates,

KETTLEWELL & DAVIDSON.

Renovator 3¢ pr bbl., or 20¢ per ton; one to two bbls., to the acre.

Ground plaster, \$1.12½ warranted the best.
Combination of Potash and Plaster, 2.50 per bbl.
Aug 1

AGRICULTURAL ESTABLISHMENT.

The subscriber, manufacturer of
AGRICULTURAL MACHINES

AND
IMPLEMENTS,

And dealer in SEEDS, &c., offers for sale,

HORSE POWERS, for from 2 to 8 horses.

THRESHERS, of various sizes and superior construction.

WHEAT FANS, improved pattern 1850, warranted to clean equal to any other fan at one operation.

PLOUGHS, of all sizes and various patterns.

Parker's original Iron Cylinder **CORN SHELLER**, known by some as the Virginia Sheller; price for horse power, \$27; hand power, \$24.

Smith's Patent **STRAW CUTTER**; price, \$10; one of which was exhibited at the last Maryland State Fair, and gave very general satisfaction. This cutter can be easily transported to any part of the United States, occupying, when packed, a space of only 1 foot by 4.

Also, Harrows, Cultivators, Axes, Scythes, Shovels, Spades, &c. Orders from any part of the U. States punctually attended to.

Manufactory on Water st. Warehouse, No. 36 Main street.
J. K. PARKER.

Richmond, April 1, 1850.

AGRICULTURAL IMPLEMENTS—LABOR SAVING MACHINERY.—GEORGE FAGE, Machinist & Manufacturer, Baltimore.

West of Schröder st. Baltimore, is now prepared to supply Agriculturists and all others in want of Agricultural and Labor-saving MACHINERY, with any thing in his line. He can furnish Portable Saw Mills to go by steam, horse or water power; Lumber Wheels; Horse Powers of various sizes, ranging in price from \$85 to \$200, and each simple, strong and powerful. His *Horse Power & Threshing Machine*, he is prepared to supply at the low price of \$125 complete; the *Threshing Machines* without the horse power, according to size, at \$20, 40, 65 and \$75; Improved Seed and Corn Planter, Portable Tobacco Press; Portable Grist Mills complete, \$145.

Sinclair & Co.'s Improved Chaffing and Separating Mills.

(See "Pictorial Farmer," page 14.)

BEING aware of the importance of keeping fully up with the advance of the times, has induced the subscribers to examine well relative to what is required by the farmer to facilitate his operations in getting crops to market at the earliest period and in finest condition.

The Fanning Mill being a machine of much importance, has claimed particular attention and has undergone valuable improvements, without increased complication or price, and so constructed that one passage of the grain (after chaffing) puts it in finer order than three with the ordinary Fan. By this improvement the chaff, cockle, small garlic, grit, &c. is entirely separated, dandel and large garlic almost entirely. The grain, after a few months standing, becomes light, and then may (with the dandel) be blown over with the tailings, the wind being so guided and arranged that it has increased power and direct action on the riddles. We furnish Riddles, &c. for Wheat, Corn and Oats. If Riddles for Cloverseed are wanted, we will make a small additional charge. Price \$25, \$30 and \$35.

R. SINCLAIR, JR. & CO.,
Manufacturers and Seedmen.

Aug 1

Sinclair & Co's Warranted Threshing Machinery.

THE Threshing Machinery made by the subscribers is on the same principle as those made by them during the last ten years, and the same that has given such general satisfaction to their customers. Improvements such as practical experience has suggested have been added: the cylinders, instead of being sheathed with sheet iron, are now heavily plated, which, with the addition of wrought iron bands, and braces, renders the cylinders excellent, both as regards effect and endurance. The action, bearings and arrangement of the gearing, is more perfectly adjusted than formerly, rendering these threshing machines equal, certainly not surpassed by any in this country.



Prices, as follows:—

- Lever power, \$100 and \$135
- Wrought iron Railway, lever power, 75, and \$100
- Threshers, 35, 40, 50, and \$60
- Straw Separators, 15, 18, and \$20
- Driving Bands, \$10 each

R. SINCLAIR, JR. & CO.

Manufacturers and Seedmen, Baltimore.

aug. 1

E. WHITMAN'S Agricultural Warehouse



AND SEED STORE,

No. 55 Light street, Baltimore,

WILL contain, this season, the largest stock of Improved AGRICULTURAL IMPLEMENTS ever offered for sale in this country, amongst which will be found

100 Whitman's Superior Wrought Iron Railway HORSE POWERS, which received the first premium at the last Fair of the Maryland Agricultural Society.

100 LEVER or SWEEP POWERS, among which will be found all the latest improvements; also, the Eddy or Taphin Power, which is portable, simple and durable, consisting of one wheel only.

200 Whitman's THRESHERS, which received the first premium, in Baltimore, in 1849. The cylinder of this Thresher, being all in one piece of iron, will last 100 YEARS, in constant use. A great improvement has recently been made in the teeth or spikes, which makes it the most perfect machine now in use.

100 other THRESHERS, comprising various kinds and improvements.

7,000 PLOUGHS, consisting of every kind now in use.

500 Premium Cultivators, \$4, \$4½, \$5 and \$6.

500 " Grain Cradles, of approved kinds.

50 " Corn Planters; price, \$20.

100 " Seed Sowers; price, 10.

Grant's celebrated Fan Mills; prices from \$25 to \$40.

Barnborough's " " " \$38, 30, \$39 and \$34.

Strong's, Rice's, Clinton, Beaton and other Fans.

Improved Harrows, Straw Cutters, Corn Shellers, Corn and Cob Crushers, Fodder Cutters and Grinders, Ox Yokes, Root Scrapers, Churns, Scythes and Sneaths, Wheelbarrows, Root Pullers, Shovels, Spades, Hoes, Forks, Buckets, &c. &c.

Also, a general assortment of

FIELD AND GARDEN SEEDS,

Which are warranted to be fresh and genuine.

apl

E. WHITMAN, JR.

CHICKERING'S PIANOS.

THE Subscriber is Sole Agent in Baltimore, for the sale of CHICKERING'S CELEBRATED IRON FRAMED GRAND AND SQUARE PIANO FORTEs, and is constantly receiving supplies from the factory in Boston, which are sold at the same prices as charged by Mr. Chickering.

Chickering's Pianos are unquestionably the best instruments manufactured in the United States. In regard to superior quality of tone, touch, durability, and all the essential qualities of a Piano, they are admitted by the most eminent Pianists to be equal to Erard's, of Paris, or Broadwood's, of London. Although there are several factories in Boston and New York of high reputation, Mr. Chickering undoubtedly stands at the head, posessing eminent talent, skill, untiring industry and experience of some 35 years as a manufacturer of pianos, with abundant means to enable him to carry out his plans in producing the very best instruments.

Orders from the country, entrusted to the subscriber, either for Pianos, Music, or any article in his line of business, will be faithfully executed.

F. D. BENTEN,

181 Baltimore street.

jl 1 6t*

GUANO!—GUANO!!

THE Subscribers have on hand full supplies of
 Peruvian Guano,
 Patagonian Guano, 1st and 2d quality,
 Ground Bone, very superior,
 Clover Seed,
 Buckwheat Seed,
 Timothy Seed,
 Ground Plaster,
 Kettlemell's Renovator, at manufacturers prices,
 Reynolds' Superior Corn Sheller,
 Salt, Fish, Tar, Molasses, Bacon, which they will sell at the
 lowest market prices, and give every attention to their proper
 shipment. Address, **W. WHITELOCK & CO.**
 Cor. Gay and High Streets, Baltimore.

NEW OXFORDSHIRE AND BAKEWELL AND SOUTHDOWN LAMBS.

THE subscriber will have ready for delivery in August and
 September next, a number of **BUCK LAMBS** full bred
 new Oxfordshire or Cotswold stock, purchased from Mr. Rey-
 hold, of Delaware. Price, \$15 to \$30.

Also, Bucks, a cross of the New Oxfordshire on the South-
 down and Leicester. Price, \$10. Apply to S. Sands, of the
 American Farmer, or to **WM. JESSUP,**
 Cockeysville, Balto. Co., Md.

SOUTH DOWNS SHEEP FOR SALE.

A very superior thorough bred buck, descended from Mr.
 Eltman's stock. He is very large, 3 years old, in fine
 condition, and has clipped 8 lbs. of wool of excellent quality—
 having bred to him for two seasons, he is therefore offered for
 sale. Also a yearling buck sired by the above. Forty five
 select South Down ewes having been bred to the above describ-
 ed buck, the subscriber can dispose of a number of ewes
 and buck lambs, and a few breeding ewes.

M. TILGHMAN GOLDSBOROUGH.

Easton, Talbot Co: Md. 10th May, 1850.

Je 14t

HUSSEY'S REAPING MACHINE.

THE subscriber continues to manufacture his **REAPING**
MACHINES, in Baltimore. Farmers are reminded to
 forward their orders at as early a day as the appearance of
 their fields will justify, that a proper preparation can be made
 to supply the increased demand—the question with the farmer
 now being not whether a machine will cut his crop, but
 whether he will have a good crop to cut with a machine.

Every improvement will be made this year to render the
 machines durable and perfect.

Price of Reapers, from 100 to 170 dollars. Extra parts will
 be furnished at moderate prices, and may be worth to the far-
 mer ten times their cost.

Price of Mowing Machine, including Reaping, \$195, and
 delivered in Baltimore, at any time from February to July.
 Baltimore, March 1, 1850.

OBEDE HUSSEY.

Montgomery, August 4, 1849.

This is to certify that I had one of O. Hussey's Reaping
 machines at work in my field, cutting Timothy Grass a part of
 two days, and cut in fourteen hours with said machine twenty-
 eight acres, with one span of horses; it was done in a
 neater style than it could be done in any other way. The cut-
 ters of said machine were not sharpened during the time of
 cutting said field of grass, and the last acre was cut in as good
 and neat a style as the first. I have also seen said Reaper
 cutting wheat, and I consider it the best machine for cutting
 lodged grain that I have ever seen operate.

DANIEL S. GRAY.



C. H. DRURY, Hollingsworth street
 corner of Pratt—Head of the Basin
 —having completed his establishment
 with Foundry connected, for the making
 of his own Castings, is prepared to furnish
 all varieties of **AGRICULTURAL IMPLEMENTS** and
CASTINGS, made to pattern of the best material.

The following is a list of **FLOW'S** kept constantly on hand:
 Davis, of the different numbers, for wrought and cast shears,
 S. & M., Chenoweth, Wiley, 2 and 3 furrow, No. 0, Hill side,
 No. 1 and 3 Connecticut—Beach Improved or Possey Plow,
 with common Davis cast shear—Self-sharpener or wrought
 shear—Corn Cultivators, plain and expanding—Tobacco do.—
 Wheat Fans—Corn shellers with double hopper—Old Vertical
 and Virginia sheller—Harrows—superior Pennsylvania made
 Grain Cradles—Revolving Horse Rakes—Cylindrical straw
 Cutters, &c. &c. Horse Power **GRIST MILLS**, a very use-
 ful and saving article, and coming into general use. **HORSE**
POWER AND THRESHING MACHINES, of these I
 need not say any thing, as wherever they have been in use any
 time, they are preferred to all others.

C. B. D. will this year make a smaller size Power & Thresh-
 er, (price of Power, \$100, Thresher, \$50, Band, \$10, or when
 taken together, complete, \$150 cash.) Persons in want of
 implements made of the best material, and put together in the
 strongest and best manner to answer the purpose for which
 they are intended, are invited to call on the subscriber. Je 1

GUANO.

PERUVIAN, of the latest importations, per Kirkland & Jno.
 G. Coster. Also, Patagonian, No. 2 and 3, warranted
 equal to any in this city. Also, Ground Plaster in barrels.
 For sale by **S. FENBY & BRO.**
 Corner Gay and Pratt street.

GUANO!—GUANO!!**NOTICE TO FARMERS AND PLANTERS.**

THE undersigned have on hand a large supply of **PERU**
VIAN and **PATAGONIAN GUANO**: which they offer
 for sale in quantities to suit, and at low prices.
 The "**PERUVIAN**," or No. 1 *Guano*, is all of direct importation,
 this year, and its quality is not surpassed by any in the
 Country!!!

Our "**PATAGONIAN**," or No. 2 *Guano*, is superior to any other
 importation in the market, and for clayey lands, white oak
 or other soils, requiring the aid of Phosphates, is equal in
 value to some specimens of the Peruvian.—See Dr. Higgins,
State Chemist's Report, pages 43, 73 and 73.

The following Certificate, furnished by an eminent Chemist
 of Baltimore, of our Patagonian Guano, shows at once its val-
 uable properties.

To **P. Malcom & Co., Baltimore**—I consider the specimen
 of Patagonian Guano, submitted by you for examination, to be
 one of the best I have ever seen, and compares very well with
 some specimens of Peruvian. **D. STUART, M. D.**

77 Eataw Street, Baltimore.

—This description can be obtained for nearly one-third
 less than the price of Peruvian!!!

Our *Guano* is put up in barrels, and in strong substantial
 bags, weighing from 150 to 200 lbs. and we warrant it to be
 pure and unadulterated; each bag having been weighed and
 inspected by the "State Inspector," whose stamp is upon
 every bag. A liberal deduction made to clubs or parties pur-
 chasing large quantities. Farmers will do well to call upon us
 for purchase.

We have also constantly on hand, Bone Dust and ground
 Plaster, in barrels. **P. MALCOM & CO.**

Grain and Flour Warehouse, No. 1 Wood Street,
 Je 14t Bowly's Wharf, South of Pratt Street.

GROUND BONE.

The subscribers have commenced grinding, and will keep
 constantly on hand, Ground Bone of superior quality, being
 all fresh, gathered daily, from the various Market and slaugh-
 ter houses of this city—(an exclusive privilege of our own)
 and warranted free from Chemical, or any other process, or
 impurity, which has a tendency to diminish their Fertiliz-
 ing qualities. Orders left with Messrs Geo. C. Collins & Den-
 son, 83 Light-st Wharf, or at the Factory, opposite the outer
 Depot of the Baltimore and Ohio Rail Road, will meet with
 prompt attention. Price fifty-cents per Bushel.

P. S. Samples at the office of the American Farmer.
COLLINS & BULLOCK,
 Glue and Neats-Foot Oil Manufacturers,
 Columbian street.

BONE-DUST AND POUDETTE ESTABLISHMENT.

On Harris' Creek, at Canton, Baltimore.
THOMAS BAYNES, continues the manufacture of **POU-**
DRETTE, and is prepared to supply any orders for the
 same.—The article manufactured by him, will be found proba-
 bly more valuable than any made in the Eastern cities. His
BONE-DUST weighs from 55 to 60 lbs. to the bushel, and is
 as fine as any article sold in this market. Price of Bone Dust,
 55 cents per bushel. Poudrette, \$1.12 per barrel. Persons
 sending their carts or wagons to the factory, can obtain the
 Poudrette at 30 cents per bushel.

—Any orders left at the factory, or with Mr. S. SANDS,
 editor of the "*Farmer*," at the State Agricultural Society's
 Rooms, will receive immediate attention. Terms, cash.

LIME.

THE subscribers are prepared to furnish Building and Agri-
 cultural Lime at the depot on the Back Basin, corner
 of Eden and Lancaster-sts., which they will warrant to give
 satisfaction, it being burnt from pure Alum Lime Stone, equal
 to any found in the United States. Orders may be left with
WILLIAM ROBINSON, No. 15 Hollingsworth-street, near
 Pratt.

if FELL & ROBINSON, City Block.

A. G. MOTT,
AGRICULTURAL IMPLEMENT
MANUFACTURER,

No. 36 Eataw street, near the Belair
 Market, Baltimore. Plows, Cultivators, Harrows, Wheat
 Fans, Straw Cutters, Grain Cradles, and all of the best and
 most approved Agricultural Implements in use.

—Agent for the celebrated N. York Wiley and Empire
 Plow Castings. mar 1

The Plough, the Loom, and the Anvil,

It is a Monthly Journal of never less than 64 pages, beautifully printed, on the best of paper, and conducted by J. S. SKINNER, founder of the first agricultural journal published in the United States.

The object of this journal is to teach the Farmer and Planter not only what is transpiring to improve practical agriculture, but to prove to them by argument and illustration, how the prosperity of American Agriculture is blended with, and promoted by, the prosperity of all other industrial pursuits in our own country.

The following are taken from hundreds of the like, to show the bearing and merits of the work.

The July (1850) is the first of the (third) volume, and will be a good time for subscribers to commence. Back volumes to be had.

P. S.—Particular attention is paid to the woollen and iron interests as connected with agriculture.

Hillsborough, Ohio, 24 February, 1850.

I will only add that the zeal and ability with which the "Plough, the Loom, and the Anvil," has been conducted thus far, and the promise it affords for the triumph of the principles it advocates, demand of its patrons, and the friends of protection and national prosperity and independence, everywhere, renewed, and more persevering efforts to extend its circulation, and, as I would not recommend others to do what I would not do myself, I engage and hereby pledge myself to be one of 1000, or 100, to procure five new subscribers to "The Plough, Loom, and Anvil," and in default, take that number myself, for gratuitous distribution.

I have the honor to be, very respectfully,

ALLEN TRIMBLE.

NOTE.—The words in *italics* emphasized by the writer.

Mr. Philney, writer of the following, is well known as one of the most accomplished and practical farmers in New England.

Lexington, Mass.

As for my opinion of your new work, "The Plough, the Loom, and the Anvil," in the first place, I have been actually astonished that one hand and head could do so much. I want more time than is allowed me in the day and night hurry of court business to express my views of a work so broad in its range, and so eminently calculated to be of great utility to the interests of the whole country. I most sincerely believe it will do more good to promote the cause of agriculture, to give a healthy tone to the great body politic, and to reconcile conflicting parties than all the noisy declamations of hotbed politicians. In short, it is just what the country wants, and must convince every owner of land, that if he would thrive by the plough, it must be by bringing it into proximity with the loom and anvil. I had not seen a single number of the work till I received the seven numbers forwarded by you, and regret that I have so long been deprived of perusing its interesting pages. Every New England man, woman or child owes you a debt of gratitude that should at all times secure to you open doors and open hearts.

With kindest wishes, that you may for a long time to come be enabled to pursue your useful labors, I am, very sincerely your friend,

E. PHINNEY.

Senate U. S. Washington.

I was much gratified at the perusal of your speech (at Middletown, Connecticut,) which exposed the fallacies of our free trade politicians. The true cause of the depression of agriculture in our country, is to be found in the fact that we purchase and pay for immense quantities of foreign bread, meat and vegetables, when we pay for the articles manufactured abroad which we consume. I trust your labors may open the minds of our farmers to the truth. Let them see that when they wear a coat made of British broadcloth, they must pay for the food the manufacturer consumed while engaged in making the cloth. With great respect, your obedient servant,

J. R. UNDERWOOD, Of Kentucky.

To the Editor of the Plough, the Loom, and the Anvil.

EXTRACT FROM HOLLIDAYSBURG, Pa.,

9th March, 1850.

I wish your "Plough, Loom, and Anvil" was read by every farmer in our country; it would be a perfect panacea for many of the evils with which we are oppressed. It would produce as great a sensation as fire in a barn among rats. But there is a good time coming, there is every now and then a star appearing in the horizon that did not previously exist. I hope to be able to do something to advance the interests of your journal, but can't promise to enter Governor Trimble's list, as too many of our farmers would rather read political squibs, than anything that concerned their calling. Yours respectfully,

JOSEPH DYSART. Nashville, Dec. 30, 1849.

Every man in the United States ought to read "The Plough, the Loom, and the Anvil." MARK R. COCKRILL. The terms of subscription to the Plough, the Loom, and the Anvil, are—in advance for two subscribers, for two years, \$5; for one subscriber \$3 a year. The next July number will be the first of the next volume. Address, J. S. SKINNER, aug1—11 20 Walnut Street, at his cost and risk.

PENNOCK'S PATENT

SEED AND GRAIN PLANTER.

For Planting Wheat, Rye, Barley, Indian Corn, Oats, Beans, Peas, Ruta Begas, Turnips, &c.

This Machine operates equally well on all kinds of land, and is not injured by coming in contact with rocks, roots, &c. It will plant point rows, and all irregular shaped fields, without sowing any part twice over. With a saving of from 10 to 15 per cent in labor; it will, with ease for two horses, plant from 10 to 12 acres per day of Wheat, Oats, Barley, and other small grains: and with one man and horse, it will readily plant from 15 to 20 acres per day of Indian Corn, Beans, Peas, Ruta Baga, &c.

It will save from 2 to 3 pecks of seed per acre, and yield from 15 to 20 per cent. more than the broad cast seeding, by distributing the grain uniformly at any desirable depth, and leaving a ridge of earth between the rows. The roots of the young plants are protected during the winter by the action of the frost and rain mouldering the earth upon them, instead of being thrown out and exposed as in broadcast. On this account the stalk is stronger and less subject to mildew, and is not so liable to injury by the fly.

The farmer is frequently prevented by rain from harrowing in his grain after it is sown, which harrowing is needless in seeding with this machine, as it completes the work at once.

RECOMMENDATIONS.

"Previous to harvest we had 5 acres carefully measured with chain and compass by W. Pennington the Surveyor of the neighborhood, assisted by John Jones. The Surveyor was present when the wheat was cradled, and saw that each acre had its due share. It was put away in separate mows, and threshed separately, and the grain all measured.

No. 1 and 2.—Two acres of broadcast, sowed together.—Two bushels of seed to the acre—Seventy-five shocks—55 bushels of wheat, or 97½ bushels to the acre.

No. 3.—One acre drilled, adjoining the above, the land, if any different, rather inferior; treated exactly alike—one bushel and one peck of seed to the acre—42 shocks, 35 bushels.

No. 4.—One acre drilled a little distant from No. 3, one bushel and one peck of seed, 42 shocks, 35 bushels.

No. 5.—One acre drilled a little distant from No. 4, one bushel and one peck of seed, 50 shocks, 40 bushels to the acre.

Here we see by the use of the drill alone, (the soil being in the same, or perhaps an inferior condition,) the crop was increased 7½ bushels per acre, and adding the amount saved, (3 pecks) make 8 bushels and 1 peck to the acre; and further, that the amount of straw to the drilled acre, with a smaller quantity of seed sown, increased 12 per cent., and the amount of grain on the same acre was increased more than 37 per cent.

The Drill used was invented by M. PENNOCK & SONS, of Kennet Square, Chester County, Pennsylvania. Our own convictions have been sufficiently strong upon the above experiment as to cause us to purchase a Drill, or as it should be called, a wheat and corn planter, for it plants either equally well, for our own use, with which we have put in this fall the entire field of wheat, containing about 40 acres.

Respectfully,

CHARLES NOBLE.

Philadelphia, 10th mo., 1844.

Lancaster Co., Pa., September 1846.

We, the undersigned, do hereby certify that we have used "Pennock's Patent Seed and Grain Planter," and take pleasure in stating, that we believe it to be the best machine for the purpose intended, that is now in operation; and that we can with confidence recommend it to the farming community as one of the most economical and perfect agricultural implements with which we are acquainted.

Henry Musselman,
Abraham Weaver,
John Musselman,
David Miller,
Daniel Krug,
John Kachel,

Martin Herr, of Pequa.
John Weaver,
Joseph Weaver,
George Morgan,
John Greider,
Benjamin Greider.

This may certify that I have had in use during the spring of the present year, one of S. & M. Pennock's Patent Seed and Grain Planters, and sowed out and planted corn with it,

to my entire satisfaction. I believe it to be one of the most perfect and useful farming implements ever invented, and shall in future use it exclusively in my operations of sowing and planting grain. The experience I have had convinces me that the machine is a great saver of time, seed and labor.

H. W. SWYDER,

Sells's Groce, Union Co., Pa., June 23, 1847.

This is to certify that we have used "Pennock's Seed and Grain Planter," and do state, that the wheat sown by it, on an inferior quality of land, is much better than that sown broadcast. Besides the great increase of yield and the saving of a half a bushel of seed per acre, we are convinced that the drilling system possesses many important advantages over the old broadcast method of seeding.

Abraham S. Mylin,
John Sener,
Marlin Herr,

Christopher Herr,
Rudolph Herr,
John Heller.

Lancaster County, September, 1846.

This is to certify, that I have been using "Pennock's Patent Seed and Grain Planter," for three years, and can recommend it to wheat growers as the best article of the kind ever introduced. I have had other drills in use but could not operate with them to my satisfaction. I do certify that the yield of grain sown with this drill is 50 per cent over the usual broadcast. And I would not part with my drill for five times the amount it cost if I could not get another.

B. GROFF.

In the year 1844 I purchased one of Smith's Drills for the sum of Twenty-five Dollars, which upon trial I found would not answer the purpose; and being fully convinced of the advantages of drilling over the broadcast system, I resolved to try another that professed to be an improvement, at the cost of \$50. This one proved but little better than the first. I then bought one of "Pennock's Patent Seed and Grain Planters," from Kennet Square, Chester County, Pa., for \$100, which I have used, and believe it to be the best machine that has been introduced. It plants all kinds of grain at any depth required, and operates equally well on rough and hilly as on level land. I would not part with it for \$200 if I could not get another.

ELIAS HERR.

Lancaster Co. Pa. September, 1847.

S. & M. PENNOCK,
Dayton, Montgomery Co., Ohio.
Nov. 27, 1847.

Gentlemen:—

Having the last year tested the merits of your Seed and Grain Planter, I certify that in addition to the saving of one peck of seed per acre, the yield was from three to eight bushels per acre more than that sown broadcast.

I also find that, by planting with your Machine the grain is much better protected against storms, and not so liable to be thrown out and killed by the winter. The experiment was so entirely satisfactory, that this season I have purchased one of your Machines, and with it put in my entire crop of wheat.

I am yours obediently,

CYRUS HULL, Jr.

This is to certify that we have had and used on our farms for two years, "Pennock's Patent Seed and Grain Planter," and feel confident that it is one of the best Machines ever introduced. The great advantages it possesses over other Machines are, that it is adapted to all kinds of land, and will sow fields of any irregular shape without seeding any part twice over; also all kinds of grain, at any depth wished. We also certify that the amount of grain raised by drilling over broadcast sowing, fully paid for our machines the first year, without counting the saving of the seed, which was a half bushel to the acre.

David Groff, John Shenk, Tobias Herr.

Lancaster Co., Pa., September, 1847.

To S. & M. PENNOCK:

This certifies that I had several acres of wheat put in with your Drill, in September of 1846. Previous to harvesting it, I had one acre carefully measured with chain and compass by Jacob Diehl, and several others of the neighborhood. Several persons were present at the time the wheat was cradled, and saw that each had its due share. I had it carefully put in the barn and threshed separately, and the result was five and one eighth bushels in favor of Drilling.

Yours, truly,

PETER DIEHL.

New Oxford, Adams Co., Pa., Nov. 3, 1847.

I do hereby certify that I have used one of Pennock's Patent Drills for five years, and have put in from fifty to seventy acres of wheat every year since, and have never failed having a good crop. I think I can safely say, that I have realized from 30 to 50 per cent., or that it has averaged me from \$300 to \$400, and even \$500 a year, over the usual broadcast seeding. My land being low, I have lost greatly by the winter throwing the roots entirely out, which is wholly obviated by

drilling. I would not take \$500 for my Drill if I could not get another of the kind.

JOHN HUEY.

East Fullingsfield, Chester Co., Pa.

This is to certify that we have used Pennock's Patent Seed and Grain Planter, and consider it superior to all others on account of its simplicity and adaptation to all kinds of land, both even and hilly.

It sows equally well, all kinds of seed, at any depth wished. Many of these machines have paid over 100 per cent the first year.

Being convinced of the advantages of this machine over all others, we have purchased the patent right for nine counties in eastern Pennsylvania.

GEORGE W. LEE & CO.

Shirley, Va. November 5th, 1849.

To Messrs. S. & M. PENNOCK:

I think your Drill Machine is the most complete labor-saving machine I ever saw; it does the work of four barrows, twelve horses, and five good men, (one of them a good *Sevier* man,) with only three horses and two smart boys. I am determined to have two Drills by next season if possible.

Most Respectfully, Yours, &c.,

HILL CARTER.

Mr. Carter informs us since harvesting his wheat crop this season, the only objection he has to the result of his experiments with our seed planter, is, that it made him a *Sevier* harrow; "his drilled wheat was much larger," and he expressly orders a machine timely for this fall's seeding, and says he would not be without one on any consideration.

Messrs. S. & M. PENNOCK, Reading, Milford Co. Pa. July 21, 1849.

Gentlemen:—I have this day threshed and measured the wheat grown on one acre of land, one half of which was drilled in with one of your machines; the other half was sown broadcast and harrowed in in the usual manner. The result is as follows:—The half acre drilled, one and a fourth bushels of seed per acre, 13 shocks measured 12 bushels and 2 quarts. The half acre broadcast, one and three fourths bushels seed per acre, 8 shocks measured 7 bushels, 18 quarts. The quality of ground was exactly the same, and treated alike in every particular, previous to seeding. Difference on the half acre in favour of the drill, 4½ bushels. Add one fourth bushel saved in seed, makes 4 and three fourths bush. more than on the broadcast seeding.

Yours truly, &c.

ABNER THOMPSON.

We the undersigned, were present, saw the grain measured, cut the grain, and assisted in threshing the same, and do hereby testify to the correctness of Mr. Thompson's statements.

James Reed,

William Stealy,

D. C. Miller,

Alexander Reed,

H. G. Morris,

George Ashby,

The above machines are manufactured and kept constantly on hand at Waterford, Loudon County, and Millcreek, Berkeley County, Virginia, where orders will be thankfully received, and also by

S. & M. PENNOCK & CO.

Aug. 1. 34.

Kennet Square, Chester Co. Pa.

WHEAT DRILLED IN.



WHEAT PLOUGHED IN.



WHEAT HARROWED IN.



GREAT SALE OF SHORTHORN CATTLE.—The subscriber will offer for sale, without reserve, at public auction, on Thursday, the 29th day of August next at 1 o'clock, P. M., on the farm of J. F. Sheafe, Esq., at New Hamburg, Dutchess Co., New York, about 35 head of Shorthorn cattle, including cows, heifers, and calves.

This herd was mostly bred by Mr. Sheafe, and I do not hesitate to say, that I think it one of the very best in the United States; and I have seen and particularly examined nearly all of them. Great attention was paid in the commencement of this herd, to the milking properties of the animals forming it; and this together with fine points and good growth and constitution, have been steadily kept in view in its breeding. There is but one cow in the herd which gives less than 20 quarts per day, in the best of the milking season, while one has given over 39 quarts per day and made 15 lbs. 3oz. of butter per week, and two others have given respectively, 31 and 24 quarts per day. Their color is of the most fashionable and desirable kind—red, red-and-white and a rich strawberry roan—only one white cow in the lot. They are of good size and fine style, and all in calf to the superb imported bull Exeter, who will also be offered for sale at the same time.

Pedigree of Exeter.—Exeter is of the Princess tribe of Shorthorns—was calved in June 1848, and bred by Mr. John Stephenson, of Wolston, Durham, England. He was got by Napoleon, (5,328,)—out of Jessamine, by Commodore (3,452)—Fawn, by Belvidere, (1,706)—Jenny, by Belvidere, (1,706)—Cherry by Waterloo, (2,816,) &c. See English Herd Book, Vol. V., for the full pedigree.

Exeter was selected for Mr. Sheafe, by a first rate Judge of Shorthorn stock, and was considered one of the very best bulls in England. Quite a high price was paid for him; and it is believed that his superior, if even his equal, has never before been imported into this country. He carries an enormous basket for his age, and his style, handling, and quality are of the finest kind. His color is mostly a beautiful yellow-red, which is a bright-red with a fine golden or snifron undercolor, arising from a rich yellow skin. He is the only bull of this peculiarly desirable red, ever imported into America. Calves got by him, out of this herd of cows, will fetch a high price the moment they are dropped.

Mr. Stephenson, the breeder of Exeter, now stands at the head of his class in England, and his stock is of the highest repute. It is entirely of the Princess tribe, and traces its pedigree without any alloy or Galloway blood, back to pure Shorthorns, for upwards of two hundred years; a matter of no small consideration to those who wish a superior fresh cross.

Catalogues of the above stock, with pedigrees in full, are now ready for distribution.

Southdown Sheep.—A choice flock of this superior breed of mutton sheep will be sold on the same day as above.

Suffolk Swine.—One boar and several breeding sows and pigs of this fine breed of swine.

Working Cows.—A handsome pair of red working oxen. J. A. B. ALLEN, 189 Water st., New York.

PRACTICE & THEORY.

THE SUBSCRIBER having a thorough practical knowledge of the application of Machinery for Agricultural purposes, is therefore enabled to offer his fellow farmers, **THRASHING MACHINES** of various sizes, constructed and built at his own shops, which are unequalled for mechanical principle, durability and cheapness. I am desirous that my Machines should go at once into farmers' hands at the cheapest possible rates, request therefore to know the amount of work wanted per day and the machine and price will be made known. Machines delivered in Baltimore, or the Balt. & Ogd. Rail-road. Address, JAS. C. ATLEE, New Windsor, Carroll Co. Md.

THRASHING MACHINES.

WE would call the attention of Farmers to our stock of Thrashing Machines now on hand, and to which we are daily making new additions, among which are to be found a Thrashing Machine of late construction which we warrant equal if not superior to any in use. It will thresh faster than any other machine requiring the same amount of Power, whilst it does away with many of the objections heretofore urged against this most useful of all Agricultural Implements; such as choking, cracking the grain, and the great liability to getting out of order, whilst its construction ensures strength and safety from any accident in case of the breaking of teeth, &c.

Also Cope's wrought Iron Thresher, being composed solely of wrought metal, both concave and cylinder. The cylinder is constructed of wrought iron bars, having the teeth riveted fast; these bars are bound fast to four round plates equally distant from each other, with wrought iron rings in such a manner that it would be impossible to remove the bars with any pressure that might come in contact with them whilst threshing, and is so open that stones or any obstructions accidentally falling in are permitted to pass without injury to the machine.

HAMBLETON & DIDIER.

North Western Agricultural Repository.



HAMBLETON & DIDIER,
No. 97 NORTH PACA STREET, BALTIMORE.

AGRICULTURAL IMPLEMENTS.

HAMBLETON & DIDIER respectfully inform their friends and the public generally that they have opened a warehouse fronting on the two streets of 57 CHEAPSIDE and 57 CALVERT STREET, a few doors North of Pratt street, for the sale of their Agricultural Implements, where they will keep constantly on hand an extensive stock of Ploughs, Harrows, Wheat Fans, Threshing Machines, Corn Shellers, and every other article wanted by the farming interests.

They will continue their present Manufacturing Establishment at the "Northwestern Repository," 97 N. Paca street, near Franklin street, for the accommodation of their western custom, where will be found the same extensive assortment of Agricultural Implements as heretofore.

They solicit the attention of Agriculturists, as it may suit their convenience to call at either of their establishments, as their workmanship and prices will be found to compare with any in the city.

HAMBLETON & DIDIER.

HORSE POWERS.

AS the season is fast approaching, when this great labor saving machine, will be called into general use, we deem it but justice to ourselves to say to the farming community, that we have now on hand, and are still manufacturing a machine superior in both its scientific and mechanical principles, to any ever heretofore offered to the public; it consists of a LEVER POWER, the gearing of which is of the most simple and durable character, and we have no hesitancy in saying that it is capable of doing more work with less power than any similar machine now in use; whilst its combination is of such a character, that it is almost an impossibility to put it out of order. By using the best materials and moderate prices, we hope to merit a share of the public patronage, with a continuation of the favors extended by our former friends.

HAMBLETON & DIDIER.

Successors to Maxfield, Mott & Co.

No. 17 North Paca Street, Baltimore.

NEW OXFORDSHIRE LONG WOOLED BUCKS FOR SALE.

THE Subscriber has about 40 LONG WOOLED BUCKS, which he will dispose of at any time when called for.—This flock (which has been bred from some of the best ever imported,) is so well known they need no further description than to say, they continue to yield their very heavy fleeces from 9 to 16 lbs. of washed wool, and when full fattened, will weigh upwards of 300 lbs. alive. This breed of sheep are remarkably healthy and very prolific, and make a very profitable cross with the various breeds of this country, doubling the weight of wool and mutton. The price will be from \$50 to \$75 for Bucks, and from \$25 to \$30 for Ewes, according to the quality of the sheep. Gentlemen are invited to call and examine for themselves, or communicate by mail. Direct to Delaware City, Del. Jy 14 CLAYTON B. REYBOLD.

400 TONS PERUVIAN GUANO, —GOVERNMENT IMPORTATION.—The subscriber has just received per Barque "Kirkland," direct from the Chincha Islands, four hundred tons Peruvian Guano, which he offers upon reasonable terms in lots to suit purchasers. The quality of this guano is warranted No. 1. It is put up in heavy osnaburgh bags, made of the best material, and marked by the Baltimore Inspector.

"Imported by Samuel K. George, Baltimore 1850."
Owing to the scarcity of this article, and the uncertainty of later arrivals, farmers wishing to supply themselves, will do well to make their engagements without delay.

FITZHUGH COYLE,
National Agricultural Warehouse, Washington City.
Aug 1—2t

GUANO.

PERUVIAN and PATAGONIA GUANO, late importation, and superior quality—for sale in lots to suit purchasers, by

WM. ROBINSON,
No. 4 Hollingsworth street, near Pratt St. wharf.
Aug. 1. tf.

HORSE POWERS, THRESHERS, SHELLERS of a variety of patterns, **CORN & COB CRUSHERS**, Portable **CRIST MILLS and MILL WORK**, all warranted, and at the lowest prices, manufactured and for sale by

MARRAY & CLARK,
Millwrights and Machinists. No. 21 York street, near Light street, Baltimore.

We refer to former advertisements in the "Farmer" for the names of farmers, planters and others, who have purchased our implements and machinery, and who have borne testimony as to their value.

Aug. 1. tf.

WHEAT AND CORN WANTED at the Canal Mills, Georgetown, D. C.—The subscribers having purchased the Mills owned by the late Thomas J. Davis, will be prepared to purchase wheat and corn on or before 1st of August next.

WM. M. BOYCE,
VINCENT TAYLOR,
WM. D. BEALL.

Georgetown, D. C., July 19, 1850. aug1—1t

DEVON BULL ECLIPSE FOR SALE.

THIS splendid Bull was imported by Geo. Patterson, Esq., and recently owned by Col. Horace Capron, and is believed to be one of the best, if not the very best Devon Bulls ever brought to this country. He took the first prize for Devons at the Fair of the Maryland State Agricultural Society in 1848, and could not of course come in competition at the next Fair, for the same class of animals. He is extremely gentle, in good order, and will be sold deliverable in Baltimore, or at Havre de Grace, Md., for \$160. Apply at the office of the "Farmer," to SAM'L SANDS.

July 1

A Valuable and highly Improved James River Estate, For Sale.

FINDING, since the successful and free use of lime and marl, that my present force will be inadequate to my large and improved arable surface, I offer for sale privately, that desirable and productive Farm, well known as the "Rowe," situated on the North side of James River, in the county of Charles City, Virginia, immediately west of, and adjoining Sandy Point, and nearly opposite "Lower Brandon," being 70 miles from Richmond and Norfolk, and 35 from Petersburg. The "Rowe" contains seven hundred (700) acres, beginning nearly in a square, fronting about one mile on the river, and could be easily divided into two farms. Five hundred and twenty acres are open in a high state of cultivation—have been three times abundantly limed, and now all well set in clover. One hundred and eighty acres are uncleared, and in wood and timber. The buildings are all good, consisting of a two story wooden dwelling house, with seven rooms, exclusive of cellars, a kitchen, dairy, smoke house, servant's house, and a large barn, with a stationary horse power and sheller attached. The present improved condition and intrinsic value of the "Rowe," to be appreciated, ought to be personally and thoroughly inspected, by such as desire to own real estate in a region of Virginia so highly favored. If desired, I would add any additional quantity of heavily timbered land on the tract adjoining, not over 2,000 acres. Lime can be bought in any quantities at the farm for 6½ cents per bushel, and marl abounds in the counties adjoining.

This farm is not only easily and cheaply accessible to the best Virginia grain markets, but also to all others, foreign and domestic.

TERMS:—One-fourth cash, the remainder in five equal annual interest-bearing instalments, with interest upon the whole payable annually, and all satisfactorily secured. Possession after first of August. All letters, post paid, will be promptly responded to.

Aug 1—1t

Petersburg, Va.

ROBERT B. BOLLING.

POUDRETTE.

POUDRETTE FROM THE LODI FACTORY, constantly for sale, at 2½ by the single bbl., and 5 or more bbls., at \$11 per bbl., by

WILLIAM CHILD,

No. 78 South street, Bowly's Wharf. Aug 1 2t

TURNIP SEED—NEW CROP.

JUST received from the Clairmont Seed Farm, raised under our inspection, 600 lbs. White Flat Turnip Seed; 450 lbs. Red Top ditto. ditto. Also, 250 lbs. Dale's Hybrid Turnip Seed. All the above are particular fine quality. The former are best for table use, and the Hybrid for either stock or table.

R. SINCLAIR, Ja. & Co.,

Aug 1—1t

62 Light street.

WANTED—By the undersigned, a situation as Overseer on a farm. He has had the advantages of a regular course of instruction in the agricultural school at Edgemoor.

B. BURGHATTER,

July 1 Care of Henry Trommer, 8th st., Washington, D. C.

DEVON CROSSES.—For sale, two Heifers, 15 to 18 months old, got by a very fine Connecticut Devon Bull, from good common breed Cows from Chester Co., Pa. They will be put, about 1st Oct., to a thorough-bred Devon Bull of Mr. Paterson's stock. Also, a Heifer Calf, 4 months old, got by Mr. George Bright's English Devon Bull, from a very fine large red Cow, a superior milker. Price for the oldest Heifers, \$32 each, and for the Calf, \$15. Apply at this office.

Aug 1—1t

WHITE BLUE STEM WHEAT—A very fine lot of this favorite Wheat, raised near this city, well cleaned for seed, free from all impurities, for sale in lots to suit, at \$1.50 per bushel—sacks, if required, 25c. Apply to S. SANDS, Farmer Office.

Aug 1—1t

100 DOZEN HAND & HORSE RAKES, for sale by

E. WHITMAN, Jr.

CHAPPELL'S FERTILIZER.

REMOVAL.—Early in July, the undersigned will remove his office from the corner of Hanover and Lombard sts., to one of the Stores over the Howard Buildings in Lombard st. a few doors below my present office. Of this Removal, my friends will please take notice.

July 1 P. S. CHAPPELL.

SOUTH DOWN RAMS.

THE subscriber has for sale, deliverable on the first of August, Ten South Down Ram Lambs of the purest and highest bred stock in the country, having been carefully bred from original importations and from premium animals. Price twenty five dollars each Address

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WILLIAM B. DOBBIN, Baltimore.

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